



**CIMA**  
**Strategic Level – Paper P3**  
**PERFORMANCE STRATEGY**  
  
**(REVISION SUMMARIES)**

<b>Chapter</b>	<b>Topic</b>	<b>Page Number</b>
1	Management control systems	3
2	Divisionalisation and controlling people	15
3	Review and the audit process	27
4	Sampling, evidence and substantive testing	43
5	Internal controls for key cycles	51
6	Corporate governance, ethics and internal audit	57
7	What is information?	67
8	IS, IT and IM strategies	73
9	Information systems	77
10	Risk and control in information systems	81
11	The internet and auditing the system	87
12	Risk management	95
13	Foreign exchange risk	101
14	Interest rate risk	113





Chapter

# 1

# Management control systems

## Hierarchy (scalar chain) and span of control

### Scalar chain (hierarchy) 'chain of command'

Levels of hierarchy or scalar chain exists to cascade decisions, instructions, plans and objectives, often top-down within the organisation.

### Span of control

The number of subordinates supervised by one single manager.

### Scalar chain or 'chain of command'

#### Benefits from increasing layers of authority (scalar chain)

- ✓ More promotion opportunity for staff
- ✓ Retain staff by a structured career path
- ✓ Greater control and coordination

#### Drawbacks from increasing layers of authority

- ✗ Increased overhead
- ✗ Vertical communication difficulties
- ✗ Senior management become more remote
- ✗ Smaller steps when staff promoted.

Reverse the above for decreasing layers of authority.

### Span of control

#### Benefits from narrow span of control e.g. subordinates tightly supervised.

- ✓ Manager not over loaded by subordinates
- ✓ More time can be spent by superior with each sub-ordinate
- ✓ Improves communication
- ✓ Retain staff by the increased opportunity to promote them
- ✓ Greater control and coordination

#### Drawbacks from narrow span of control e.g. subordinates tightly supervised.

- ✗ Increased overhead
- ✗ Tighter supervision and control can de-motivate
- ✗ Less decision making authority given to subordinates

Reverse the above for wide span of control e.g. loose supervision of subordinates.

### The small or entrepreneurial structure

A small business such as a self-employed sole trader, partnership or owner managed company. Fonder makes the key decisions.

#### Advantages

- ✓ Creative and dynamic
- ✓ Flexible to adapt and change
- ✓ More varied tasks for staff

#### Disadvantages

- ✗ High reliance on key personnel
- ✗ Founders expertise lacking
- ✗ Poor financial controls
- ✗ Higher risk to investors
- ✗ Lack of economies of scale
- ✗ Less brand recognition

### The functional structure

The sub-division of the business system into specialised departments e.g. finance, sales and production activities.

#### Advantages

- ✓ Easier coordination and control
- ✓ Greater efficiency
- ✓ More effective career progression
- ✓ Greater synergy

#### Disadvantages

- ✗ Lack of communication by departments.
- ✗ Conflict between departments
- ✗ Bureaucracy, rigidity and tight supervision
- ✗ Specialisation of tasks removes initiative
- ✗ Lack of flexibility for change
- ✗ Lack of product or customer focus

### The divisional structure

A division is a distinct business set up within a larger company to ensure a certain product or market is handled and promoted as though it were a separate business.

#### Advantages

- ✓ Quicker decision making
- ✓ Focus on product and market performance
- ✓ Ring fencing of financial results
- ✓ More empowerment
- ✓ Good training ground for managers.
- ✓ Frees up senior management time

#### Disadvantages

- ✗ High cost of head office
- ✗ Duplication of functions (or departments)
- ✗ Reluctance to delegate by senior management
- ✗ Lack of goal congruence

### Shared service centres

Shared service centres 'consolidate one or more back-office operations for multiple divisions of the same group to use e.g. head office maintains centrally the processes of finance, information technology, customer service and human resources.

#### Benefits of shared service centres

- ✓ Economies of scale
- ✓ Divisions retain entrepreneurial speed and agility.
- ✓ Reduction in cost through shared operations.
- ✓ Standardising technology and processes
- ✓ Easier to support to multiple business units
- ✓ Could deliver higher quality service

### **Project-based, team or matrix organisational structures**

Where project teams and functions (departments) co-exist together. Project team members selected from various internal departments and coordinated by a project manager who has accountability to meet project deliverables e.g. time, cost and quality.

#### **Advantages**

- ✓ Improved communication
- ✓ Dispersion of power and influence
- ✓ Creative and innovative synergy.
- ✓ Greater customer or product focus

#### **Disadvantages**

- ✗ Complex to maintain
- ✗ Dual authority can create conflict
- ✗ Too many meetings to get things done.
- ✗ Personality clashes

### **The life cycle of the organisation**

The functional structure is normally adopted by an entrepreneurial structure because the organisation grows and requires more specialisation and control. Overtime as the organisation becomes larger, more complex and more diversified in terms of its products and markets, the next step is often to adopt a divisional structure. When companies become really large and diverse, they are often composed of a number of independent subsidiaries or divisions, these often established as separate legal entities within a group.

## Comparing and contrasting organisational structures

The small or entrepreneurial structure	The functional structure	The divisional structure	The matrix structure
Informal, small organisation	Formal, bureaucratic, large organisation	Formal, bureaucratic, complex group	Formal or informal teamwork
Founder driven with less bureaucracy.	Bureaucratic. $\rightarrow$ place for everything and everything in its place $\emptyset$	Bureaucratic. $\rightarrow$ place for everything and everything in its place $\emptyset$	Teamwork and project focused
Communication in all directions	Vertical communication	Vertical communication	Communication in all directions
Power culture	Role culture	Role culture	Task culture
Customer focused	Process or activity focused	Customer focused	Project focused
Suits a dynamic and uncertain environment.	Suits a stable and certain environment.	Suits a dynamic and uncertain environment.	Suits a dynamic and uncertain environment.
Flatter and flexible structure	Tall and inflexible structure	Flatter and flexible structure	Flatter and flexible structure
Integrated	Specialised	Specialised	Integrated
Unity of command	Unity of command	Unity of command	Dual authority
Centralised decisions	Centralised decisions	Decentralised decisions	Decentralised decisions

### Burns and Stalker

Burns and Stalker in their 1961 book, "The Management of Innovation" described two organisational types representing a spectrum that organisations could be placed.

According to Burns and Stalker,  $\rightarrow$ organic forms $\emptyset$  are more suited for unstable, turbulent and changing conditions. Unlike the rigid  $\rightarrow$ mechanistic form $\emptyset$  which is rigid and highly specialised e.g. like Harrison $\emptyset$   $\rightarrow$ role culture $\emptyset$  An organic firm tries to re-shape itself to address new problems and tackle unforeseen environmental change.



### Characteristics of 'organic' verses 'mechanistic' organisations

	<b>Organic</b>	<b>Mechanistic</b>
<b>Management Style</b>	Participative and democratic	Autocratic and lack of consultation
<b>Control</b>	Informal and decentralised	Formal and centralised
<b>Communication</b>	Lateral (all direction)	Vertical (up and down)
<b>Change</b>	Flexible and adaptive	Inflexible and slow to change
<b>Structure</b>	Flat chain of command e.g. Matrix/Team/entrepreneurial	Tall chain of command and clearly defined roles
<b>Environment</b>	Dynamic/Uncertain	Stable/Certain
<b>Outcome</b>	Creative	Efficient

### **Mintzbergs component structure of an organisation**

Henry Mintzberg identified **5 structural components** to the make up or design of an organisation, these consist of the essential building blocks for coordination and control mechanisms of an organisation.

<p><b>Strategic apex –</b> Centralised supervision and control of the business (strategic level managers). <b>‘the force of strategic direction’.</b></p>
<p><b>Middle line –</b> The middle layer of hierarchy (middle line or tactical level managers). <b>‘the force for concentration’</b></p>
<p><b>Operating core –</b> Staff directly to provide the organisations product or service. <b>‘the force for proficiency’</b></p>
<p><b>Techno structure –</b> Another layer of administration and planning whose key task is to standardise. <b>‘the force for efficiency’</b></p>
<p><b>Support staff –</b> Supports the different activities of the organisation. <b>‘the force for learning’</b></p>

Mintzberg also discussed **5 distinct organisational configurations**. Each configuration representing a different organisational type.

Configuration	Coordination	Key player	Environment	Characteristics
<b>Simple</b>	Direct/supervise	SA	Dynamic	Small, often family owned/flexible (Entrepreneur)
<b>Machine</b>	Standardise work processes	TS	Stable	Old large established organisations (NHS, Banking)
<b>Professional</b>	Standardise skills	OC	Complex	Decentralised/high training for proficiency (Teachers, Doctors)
<b>Divisional</b>	Standardise output	ML	Dynamic/or Stable	Large complex and diverse group (Virgin Group)
<b>Adhocracy</b>	Mutual adjustment	SS	Dynamic	Innovative/disorderly (BBC Film Crew)

### Business process outsourcing (BPO)

A form of outsourcing, the contracting of operations and responsibilities of a specific business function (process) to a third-party service provider. Commonly referred to as 'back office outsourcing' because it involves the outsourcing of internal business functions e.g. finance, human resource management, legal, information technology, even the 'offshore outsourcing' of call centers by companies today.

#### Benefits of BPO

- ✓ Economies of scale
- ✓ Reduces the complexity of internal management
- ✓ Management can focus on its core competencies
- ✓ Greater flexibility of using the outsourcer
- ✓ Increase speed, improve efficiency and cut cost

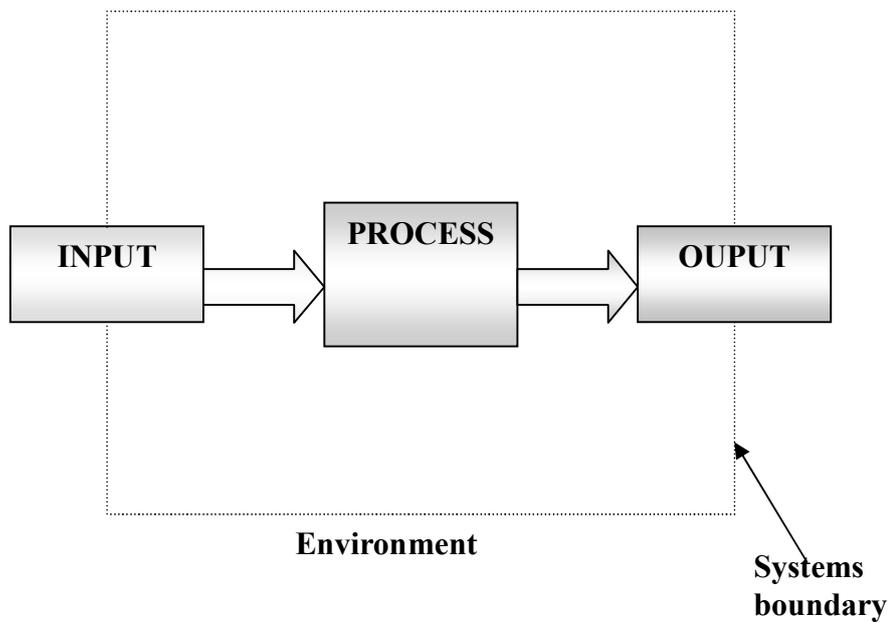
#### Limitations of BPO

- ✗ Loss of strategic control
- ✗ Organisation more vulnerable due to over reliance
- ✗ Loss of competitive advantage
- ✗ Internal redundancy
- ✗ Risk to the security of information
- ✗ Failure of outsourcer to meet service levels

## General systems theory

### A System

∓A collection of related activities working together to achieve a common purpose∅



## **Feedback and feed-forward control**

### **Feedback**

- Can be negative or positive
- Based upon comparison of actual to budgeted performance
- Control would be closing the door after the horse has bolted

### **Feed-forward**

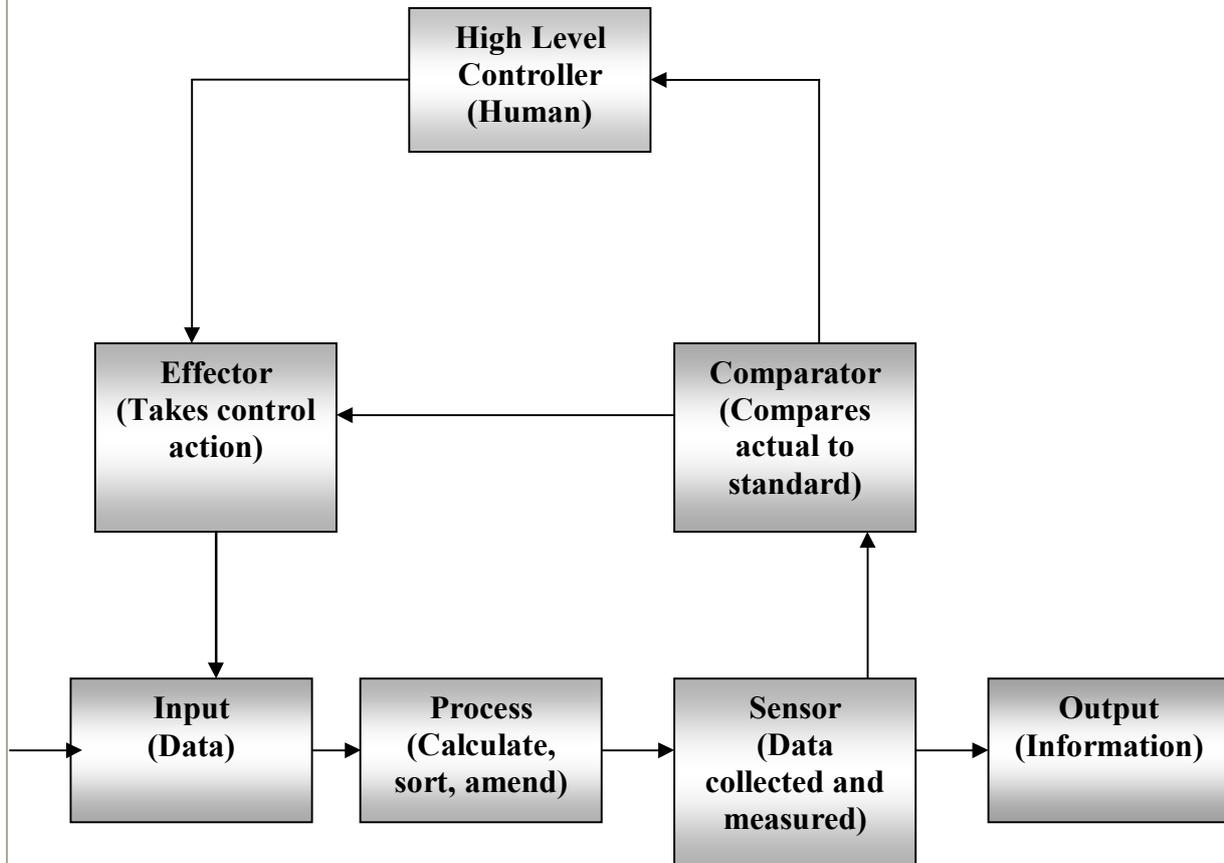
- Forecasting ahead and doing something now before the event occurs
- Closing the door before you can see the horse will bolt
- Cash budgets would be an example of this

### **Open and closed loop control systems**

In an open loop control (double feedback loop) system, corrective action is not automatically taken. The output of the system is measured, however environmental factors will also be considered, along with internal feedback before any control action is taken.

In a closed loop control (single feedback loop) system, the output is automatically compared to a pre-determined standard; any exceptions and control action will be automatically taken.

### The components of a control system (general systems theory)



- **Sensor** ó detects the information it is programmed or instructed to
- **Comparator** ó comparison of results (costs, productivity or quality) against a predetermined standard or plan
- **Effector** – automatic or human action based upon exception reporting

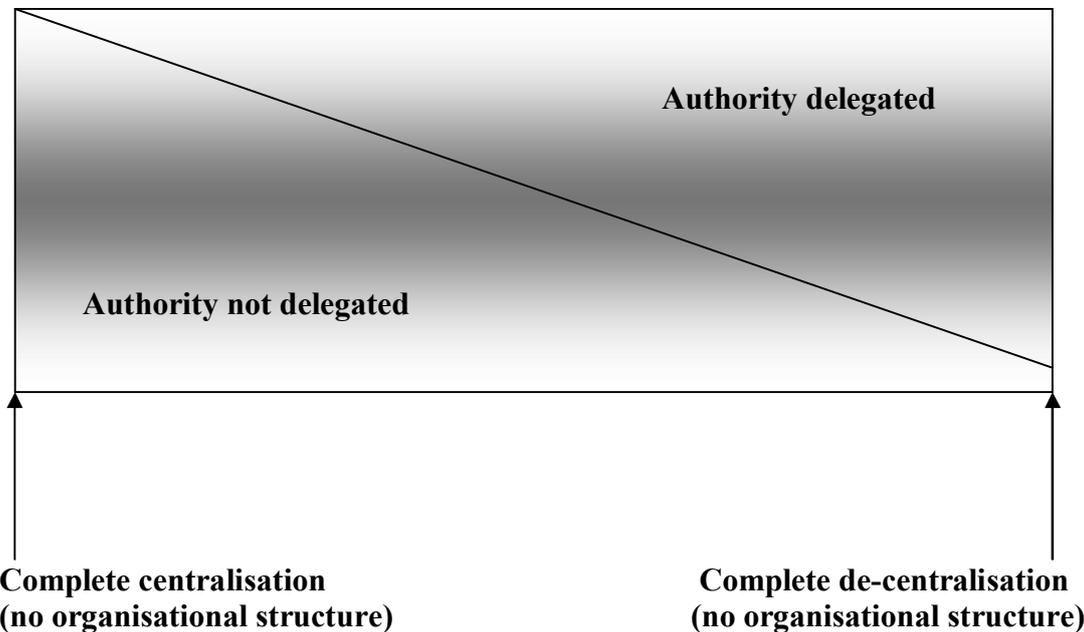


Chapter

# 2

## Divisionalisation and controlling people

## Centralisation and decentralisation



Centralisation is the minimisation of delegation of authority outside senior management.  
 Decentralisation the dispersion of decision-making authority in an organised structure.

Centralisation	Decentralisation
<p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>✓ Better control and coordination</li> <li>✓ Greater standardisation/efficiency</li> <li>✓ Corporate view rather than the individuals own point of view</li> <li>✓ Lowers overhead (less middle management)</li> <li>✓ Less duplication of a managers work</li> <li>✓ Strong leadership</li> <li>✓ Quicker decisions (no need to get authorisation).</li> <li>✓ Standardised policies, procedures and documentation.</li> </ul>	<p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>✓ More initiative to sub-ordinate.</li> <li>✓ More innovation.</li> <li>✓ Greater responsibility to sub-ordinate.</li> <li>✓ Greater motivation of worker.</li> <li>✓ Reduce workload of line manager.</li> <li>✓ Develops employees.</li> <li>✓ Decision making better quality and faster (division becomes specialist and closer to its environment).</li> <li>✓ Head office has more time for strategy rather than day-to-day involvement.</li> <li>✓ Divisional performance comparisons can be made.</li> </ul>

A **cost centre** can be a production department, location, function or item of equipment, when a division is appraised in this form; the manager has responsibility to control certain costs, not revenue.

A **revenue centre** is when a manager will be accountable for creating revenue or sales income only, not cost.

A **profit centre** is when a manager will be accountable for both creating revenue and controlling costs. The division or centre can therefore be assessed on profit earned.

An **investment centre** is a profit centre where its performance is also measured by its own responsibility to invest and fund its own resources and activities; therefore return on capital employed or return on investment, would be used normally, when appraising performance.

### **The functions of a performance measurement system**

- Publicise and communicate direction
- Control the organisation.
- Plan and allocate resources

### **Recommended process to develop a performance measurement system**

1. Senior management -a clear vision of changeø
2. Benchmark with other organisations
3. Participation by staff throughout the process
4. Targets/criteria should be set after consultation
5. Reward systems should be modified
6. Introduction of new appraisal procedures.
7. Training for managers and staff
8. Review and monitor the new system

### **Controlling subsidiaries**

- Mission statement, goals and objectives.
- Performance measurement systems
- Systems for strategic planning and control
- Management appraisal process.
- Reward
- Culture

### **The controllability principle**

The controllability principle is concerned with assessing performance based upon measures that can be controlled only by a manager and omitting any items which are uncontrollable.

### **Profit based methods for evaluating the performance of divisions**

#### **Operating profit (net profit) margin**

$$= \frac{\text{Profit before interest and tax (PBIT)}}{\text{Turnover}} \times 100\%$$

#### **Gross profit (sales) margin**

$$= \frac{\text{Turnover less cost of sales (gross profit)}}{\text{Turnover}} \times 100\%$$

Generally the gross profit or sales margin can also be referred to as the contribution to sales (C/S) ratio e.g. gross profit (sales less variable cost) ÷ sales.

#### **Mark up**

$$= \frac{\text{Turnover less cost of sales (gross profit)}}{\text{Cost of sales}} \times 100\%$$

#### **Return on capital employed (ROCE)**

$$= \frac{\text{Profit before interest and tax (PBIT)}}{\text{Capital employed}} \times 100\%$$

ROCE is also referred to as return on investment (ROI) and return on net assets (RONA). ROCE measures profitability and shows how well the business is utilising its capital to generate profits.

### Residual income (RI)

Residual income is the profit earned by a division less a notional interest charge for the investment of finance within it.

	£
Profit before interest and tax (PBIT)	X
Capital employed x head office % interest charge	(X)
Residual income	X

Residual income uses the same profit before interest and tax and capital employed value as the ROCE measure. Residual income is an absolute measure that deducts from profit before interest and tax, an imputed notional interest charge using a cost of capital or return required.

### Economic value added (EVA)

Economic value added was developed by Stern Stewart & Co and is a registered [trademark](#). EVA is an estimate of economic profit, measured as Net Operating Profit after Taxes (or [NOPAT](#)) less the money cost of capital. MVA and EVA are strongly correlated.

The economic value created by a division in a given period of time

$$\begin{aligned}
 \text{EVA} = & \\
 & \text{Net cash operating profit after tax} \\
 & \text{(adjusted for accounting distortions e.g. add back depreciation)} \\
 & \text{less} \\
 & \text{Economic depreciation (based on market value or replacement cost of assets)} \\
 & \text{less} \\
 & \text{Amortised R\&D, advertising, marketing, goodwill, brand or new product development cost} \\
 & \text{less} \\
 & \text{('adjusted' capital employed x cost of capital)}
 \end{aligned}$$

### Contrasting ROI, RI and EVA

ROI	RI	EVA
All measures support goal congruence for profit maximisation		
Accounting based measures		Cash based measure
Historical accounting for non-current assets		Use of replacement cost
Long-term expenditure written off in the same financial period		Capitalises long-term expenditure and amortises
Relative measure	Absolute measures	
No finance charge	Finance charge recognised	

### **Other methods of appraising divisions**

- Variance analysis
- Ratio analysis
- Other ratios (sales per square foot or transport cost per tonne)
- Other information (staff turnover, market share, growth, new customers)

### **Targets being set should consider**

- The difficulty of the environment the division operates within
- Motivation and aspirations of the manager
- Only ratios, costs or revenues the manager can control should be assessed

### **Classifying sources of information**

- Financial information and non-financial information.
- Quantitative information and qualitative information.
- Informal and formal information.
- Internal and external information.

### **Methods of gathering data or information**

- Questionnaires
- Interviews
- Observations
- Existing documentation

### **The balanced scorecard developed by Kaplan and Norton**

The four perspectives of the balanced scorecard

- **Customer perspective** e.g. what must we do right for our customers?
- **Internal perspective** e.g. what must we excel at internally?
- **Innovation and learning perspective** e.g. how can we innovate?
- **Financial perspective** e.g. how do we satisfy shareholders?

### Advantages

- ✓ Long-term view of performance
- ✓ Non-financial as well as financial measures considered
- ✓ Performance measures can be tailor made
- ✓ Monitor and control operations
- ✓ Communicate and publicise goals to all stakeholders
- ✓ Link to remuneration of management and staff

### Disadvantages

- ✗ Historical performance no guide to the future
- ✗ Manipulation performance measures
- ✗ Costly bespoke information systems support BSC
- ✗ Conflict or trade off between BSC perspectives
- ✗ Too many performance measures can distort the benefits

### A process to implement balanced scorecard (BSC)

1. A clear vision BSC communicated
2. Demonstration that senior management are committed to the idea
3. Education given to all managers and staff
4. Consultative meetings and presentations
5. Participation encouraged by all staff and management
6. Plan and determine how change needs to occur
7. Implement change
8. Reward and staff appraisal systems modified
9. Review and feedback obtained

### Unintended behavioural consequences of using management accounting controls

- Budget targets are the only focus.
- Financial targets will mean non-financial considerations will be ignored.
- High risk decisions taken to try and obtain high profits.
- Decisions for the benefit of the centre and not the organisation as a whole.
- Transfer pricing disputes between divisions may lead them to buy and sell outside the division.
- Unattainable targets will have a demotivating effect on managers.
- Manipulation of performance for short term gain to meet financial targets.
- If managers are asked to participate in or create their own budgets then there is possibility of including some 'slack' in the budget.

### **Criticisms of traditional management accounting system**

- Formal and periodic, information should be accessible at any time.
- Unrealistic assumptions such as direct labour costs have been classified as variable when in reality they are more likely to be fixed costs.
- Cumbersome and costly to produce information that may not be of great relevance.
- Overheads or fixed costs have become a very large part of the cost structure and traditional systems makes no attempt to understand what drives them.
- Quantitative information but no qualitative information.

### **Beyond budgeting**

Hope and Fraser (Management Accounting December 1997) argued that the traditional approach to budgeting should be abandoned for the following reasons:

- Competition demands more up to date information and budgets.
- A changing business environment means that managers need to have up to date budgets that help them make decisions.
- The budget process is too rigid as it asks conformance to it and not enough flexibility.
- It needs to be based on modern forward thinking philosophies like TQM, JIT and balance scorecard.
- There is too much top-down control and not much room for creativity from employees.
- Creates interdepartmental barriers where actions are taken nor for the benefit of the company as a whole but for the department.
- It is bureaucratic, internally focussed and time consuming.

## **Lean manufacturing**

Getting things right, first time, whilst minimising waste (zero defects or wastage) and keeping a flexible workforce in order to react well to change and reduce production lead times.

- Flexible workforce practices e.g. teamwork, empowerment and multi-skilling
- JIT stock control e.g. minimal stock
- Improving efficiency of set up and cycle of production
- High commitment human resource policies e.g. quality circle and reward schemes
- Commitment to continuous improvement e.g. TQM and benchmarking

## **Just In Time (JIT)**

The JIT philosophy requires that products should only be produced if there is an internal or external customer waiting for them.

### **Characteristics of JIT**

- Closer relationships with suppliers maintained.
- Smaller and more frequent deliveries to plan and administrate.
- Higher quality machines with regular maintenance to avoid delays.
- Involvement and training of staff to maintain flexibility.

## **Total Quality Management (TQM)**

TQM is the process of embracing a quality conscious philosophy or culture, as well as adopting quality standards and procedures within an organisation, aiming towards perfection and continuous improvement.

### **Characteristics of TQM**

- Commitment to developing processes that achieve high product quality and customer satisfaction.
- Commitment to continuous improvement.
- Involvement of the entire workforce.
- Quality assurance through statistical method a key component.

**Quality control** systems obtain feedback about historical performance in order to improve performance of the organisation in future (feedback control), it is the control of quality through inspection and appraisal.

**Quality assurance** is a planned and systematic action to provide adequate confidence that an item or product conforms to established technical requirements.

**Quality circles** is an American idea, whereby a group of 5 to 8 employees, normally working in the same area, volunteer to meet on a regular basis to identify areas for improvement or analyse work related problems in order to find solutions.

### **Costs of quality**

- Prevention cost.
- Appraisal cost.
- Internal failure cost.
- External failure cost.

**Culture** is about the shared values of an organisation, the beliefs and norms that affect every aspect of the organisation, the way that things are done around here e.g. work rituals, leadership style and learned ways that govern and shape the organisation.

- Beliefs, attitudes and values e.g. feelings or opinions towards certain matters, objectively or subjectively. These help to define priorities e.g. belief that the customer comes first or we must be more innovative or we must get things right first time
- Customs e.g. accepted ways of behaving.
- Norms of behaviour e.g. rules of behaviour considered typical of a group.
- Symbols or symbolic behaviour e.g. staff handbooks, slogans/mottos, logos or mission statements that develop and nurture staff values and norms.

### **Tools to influence social control**

- Mission statements e.g. purpose and goals promoted.
- Reward e.g. linking remuneration with performance.
- Punishment e.g. discipline of non conformists
- Recruitment of conformists e.g. those sympathetic or similar to the organisations culture.
- Inductions and staff handbooks e.g. to customise new employees to the values of the organisation.
- Training and development e.g. influence values and beliefs through education.
- Socialisation devices e.g. team building and events to reinforce a strong corporate culture.
- Rituals, symbols or slogans e.g. to integrate and guide beliefs and values.

### **Reward systems**

Considered the most important of all hygiene factors according to Herzberg, however can motivate in certain circumstances. Financial incentive schemes aim to link the performance of an individual directly to the amount of income the individual will earn.

- ✓ Motivation may be enhanced e.g. if well rewarded for your efforts.
- ✓ Productivity targets can be directly linked to the goals of the organisation.
- ✓ Changes allot of staff cost from fixed to variable cost.
- ✓ Can cut down on absenteeism or labour turnover e.g. if absenteeism linked with bonuses.

### **Employee behavioural controls**

- Reward.
- Dress code.
- Handbook.
- Induction.
- Training and development.
- Recruitment and selection.
- Standardisation of work procedures.

### **Employee output controls**

- Contracts.
- Sales results.
- Time/efficiency.
- Production.
- Appraisals.
- Customer feedback.

**Appraisal** is the review and assessment of an employee's performance, with the potential for improving effectiveness of performance through training and development. The main aim of appraising is to reflect on the past, increase efficiency and productivity by ensuring employees work to the best of their ability and develop their potential.

- Reward
- Performance
- Potential for development

Chapter

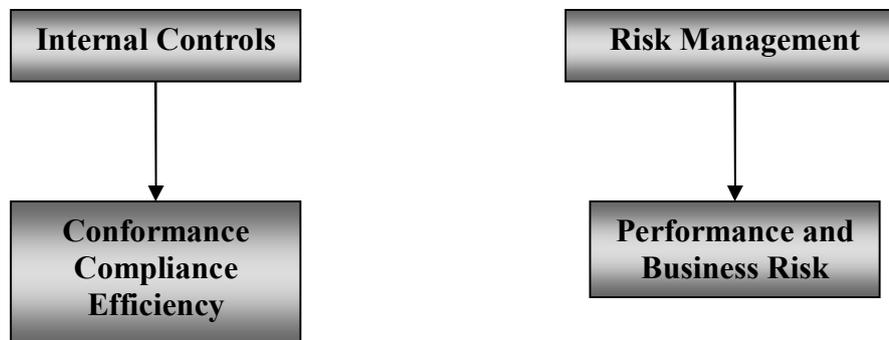
# 3

## Review and the audit process

Key points in the Turnbull Report:

- Have a **defined process** for the review of effectiveness of internal control.
- **Review** regular reports on internal control.
- Consider **key risks** and how they have been managed.
- Check the **adequacy of action** taken to remedy weaknesses and incidents.
- Consider the **adequacy of monitoring**.
- Conduct an **annual assessment** of risks and the effectiveness of internal control.
- Make a **statement on this process** in the annual report.

Internal audit is used to help directors achieve these objectives.



## Performance and business risk

The comparison of an organisations performance with that of the others is an important part of performance measurement, identifying organisations (not necessarily in the same industry as 'yard stick' for which performance can be compared to.

### Benchmarking

“A continuous, systematic process for evaluating the products, services and work processes of an organisation that are recognised as representing best practice, for the purpose of organisational improvement.”

### Types of benchmarking

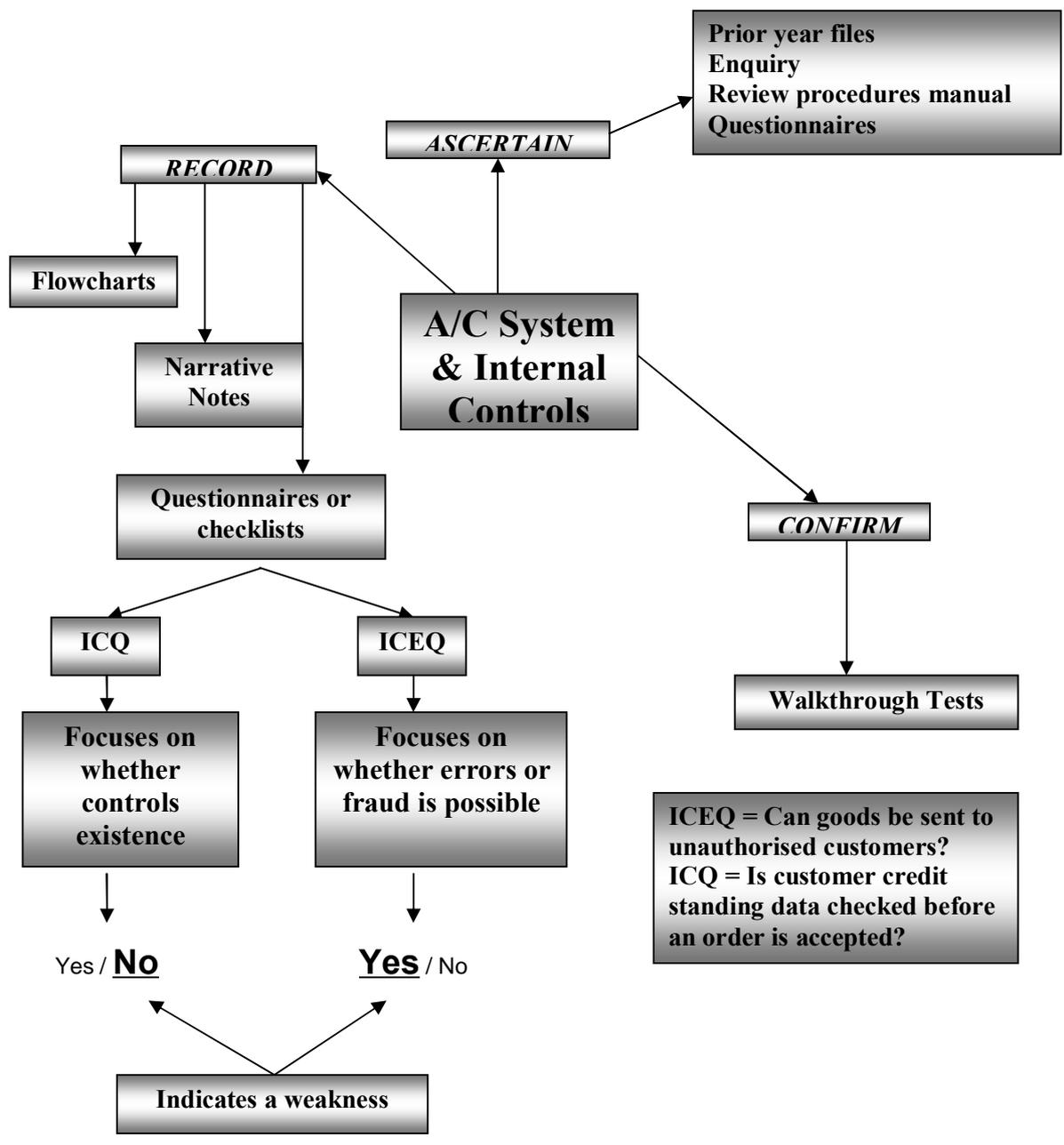
- Internal
- Best practice or functional
- Competitive
- Strategic

### The process

- Selecting what you want to benchmark
- Consider benefits against the cost of doing it
- Assign responsibilities to a team
- Identify potential partners/known leaders
- Breakdown processes to complete
- Test and measure e.g. observation, experimentation or investigation/interview
- Gather information
- Gap analysis
- Implement changes/programmes/communicate
- Monitor and control
- Repeat regularly

**Internal audit** is an appraisal or monitoring activity established by the board for the **review of the accounting and internal control systems** as a service to the entity. It functions by, amongst other things, examining, evaluating and **reporting to** the board on the adequacy and effectiveness of components of the accounting and internal control systems created by management.

Internal audit are seen as independent from management who are devising and implementing the internal controls, should be able to provide advice on internal controls both to management and the board.



ICEQ = Can goods be sent to unauthorised customers?  
 ICQ = Is customer credit standing data checked before an order is accepted?

ICQ = Internal Control Questionnaire  
 ICEQ = Internal Control Evaluation Questionnaire

## Internal controls

Comprises the control environment and control procedures. It includes all the policies and procedures (internal controls) adopted by the management of an entity to assist in achieving management's objective of ensuring, as far as practicable,

- *the orderly and efficient conduct of its business,*
- *including adherence to management policies,*
- *the safeguarding of assets,*
- *the prevention and detection of fraud and error,*
- *the accuracy and completeness of the accounting records and*
- *the timely preparation of reliable information.*

Internal controls may be incorporated within computerised accounting systems. However, the internal control system extends beyond those matters which relate directly to the accounting system.

Specific control procedures should be in place which include:

**O** Organisational structure (clear lines of responsibility and authority)

**A** Authorisation (approval of transactions or limits)

**P** Personnel (recruitment of trustworthy individuals and the right training)

**S** Supervision (discourages fraud and improves quality data entry when the work is complex)

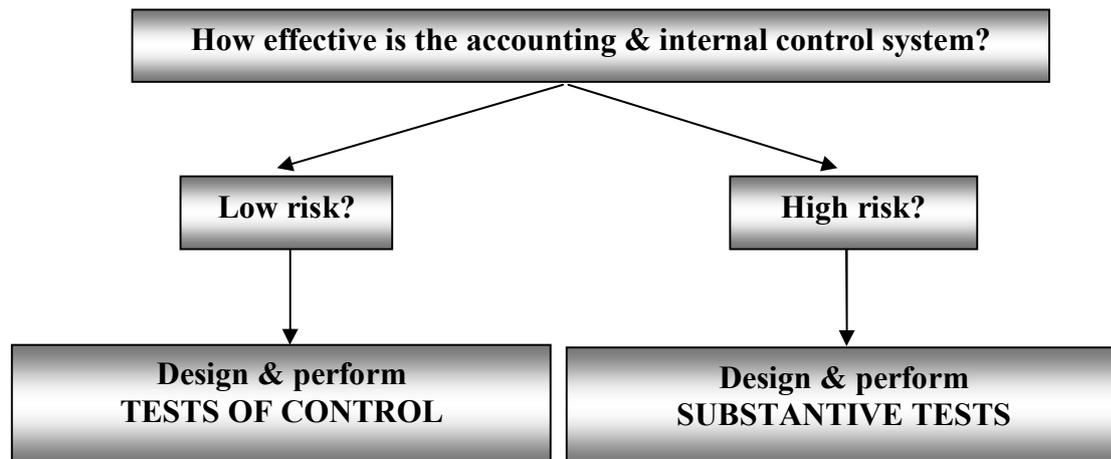
**P** Physical (physical barriers to prevent theft)

**A** Accounting (reconciliation, trial balances and input controls)

**S** Segregation of duties (separate responsibilities between those that record, process and initiate, such as the receipt, recording and banking of cash)

**M** Management (internal audit, regular review of management accounts and exception reporting)

**Audit objective:** *Assess the adequacy of a system as a basis for the preparation of accounts.*



### **Tests of control or systems based auditing**

Tests to obtain audit evidence about the effective operation of the accounting and internal control systems.

### **Substantive tests or transactions auditing**

Tests to obtain audit evidence to detect material misstatements in the financial statements.

### **Risk-based auditing**

A risk based audit would be reviewing the risk management process and considering the main risks of the organisation as a whole.

Tests of controls may include:

- **Enquiries** and **observations** corroborating internal control functions.
- **Inspection of documents** evidencing operation of an internal control, for example a transaction has been authorised.
- **Examination of evidence** of management reviews, for example minutes of management meetings at which financial results are reviewed and corrective action decided on.
- **Reperformance** of control procedures, for example reconciliation of bank accounts, to ensure they were correctly performed by the entity.
- **Testing of the internal controls** operating on specific computerised applications or over the overall IT function, for example access or program change controls.

Alternative summarised version of tests of controls

**Documentation** (written evidence)

**Segregation of duty** (i.e. staff records are separate from wages department)

**Authorisation** (by senior personnel)

**Review** (by senior personnel of other staff work)

## **Planning**

Internal auditors should plan the audit work so as to perform the audit in an effective manner.

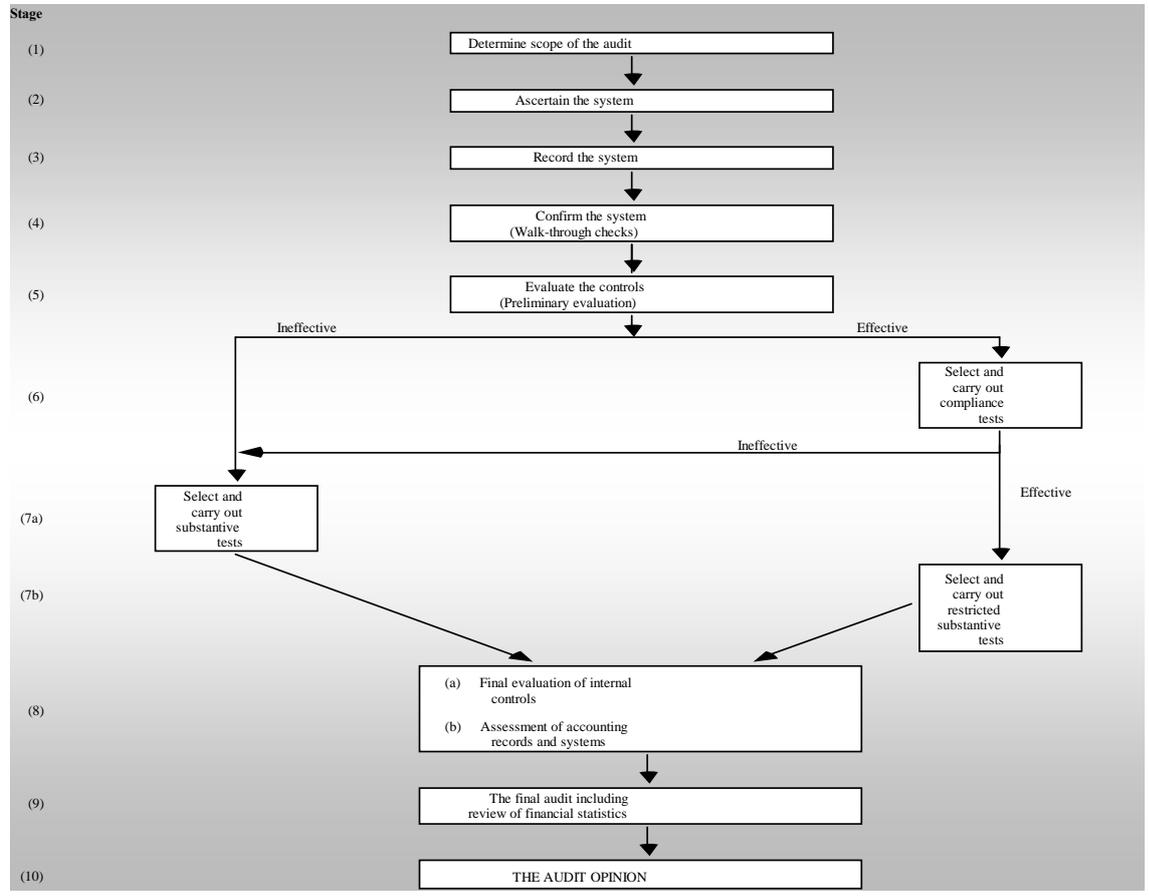
### **Planning the work**

- Determine the scope and objective of the audit (to verify assets, to check adequacy of internal controls etcí ).
- Ensuring appropriate attention is devoted to the different areas of the audit (risk based audit).
- Changes in business environment (new systems, changes in key personnel, competitor's reactions, innovations in the market, consumer preferences, legislation, board decisions etcí )
- Consider external auditors work already done.
- Review previous accounts, internal audit reports and past testing (analytical review and previous problems highlighted).
- Ensuring that potential problems are identified.
- Facilitating review.
- Ensure audit work is assigned and co-ordinated properly (select team, book hotels, communicate, brief and allocate work schedules).
- Economic service within an appropriate time scale.

### **Audit plan contents**

- Report requirements and terms of reference.
- A review of the business and financial position, reviewing why changes had occurred in the current year.
- Risk areas highlighted including assessment of internal controls.
- Calculations for levels of materiality.
- Detailing overall audit approach (substantive or compliance) including timing and deadlines.
- Staffing levels and request for any specialists i.e. computer based control assurance staff.
- A budget for time estimated for each staff member.
- Reviewed and approved by manager.
- Distribute audit plan to all staff on the audit.

# The audit process



## Materiality

An item can be considered material if its omission would *reasonably influence the decisions of an addressee of the report*, a misstatement is material if it would have a similar influence. It can be of value, nature or disclosure. This will always be a matter of judgement for the auditor but should be engaged in seeking "material" errors, omissions and misstatements.

Material items will have an impact:

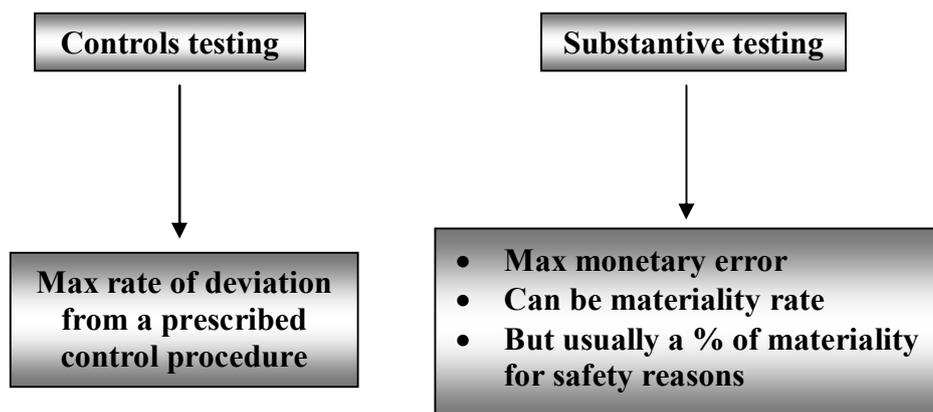
- Audit tests carried out.
- Whether adjustments should be made to the accounts.
- Whether the auditor should qualify his report on the accounts.

## The calculation of materiality

For example:

Turnover	1% - 1.5%
Net assets	1% - 2%
Net profit	2% - 6%

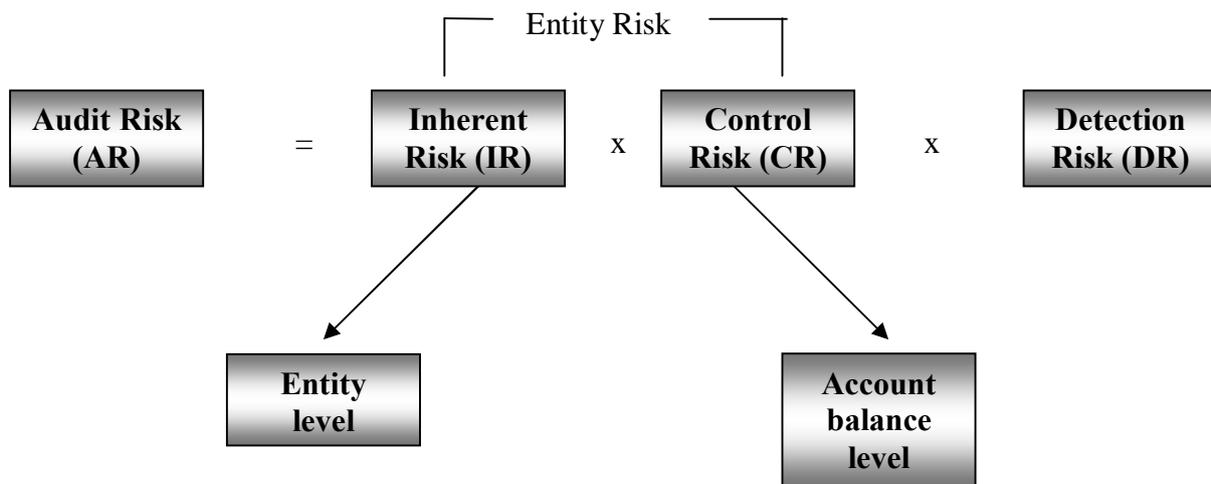
**Tolerable error (TE)** is the maximum error in the population that the auditors are willing to accept and still conclude that the audit objective has been achieved.



## Audit risk

- Obtain understanding of the accounting and internal control systems
- Sufficient to plan the audit and develop effective audit approach
- Professional judgement to assess the "audit risk" components
- Design procedures to ensure it is reduced to an acceptable low level

“**Audit risk**” is the risk that the auditor may give an inappropriate opinion on financial statements. Also known as the “ultimate risk”



## Inherent risk

The susceptibility of an account balance or class of transactions to material misstatement either individually or when aggregated with misstatement in other balances or classes, irrespective of related internal controls.

## Control risk

That material misstatement could occur and not be prevented, or detected on a timely basis, by the accounting and internal control systems.

## Detection risk

This is the risk that the auditor's substantive procedures do not detect a material misstatement in an account balance or class of transactions. It is primarily the consequence of the fact that auditors do not, and cannot, examine all available evidence.

## Documenting the accounting system

There are 3 methods commonly used to document the clients system.

**Narrative notes:** Written description of the system

### Advantages

- Comprehensive
- Easy to delegate
- "Story" approach
- Sufficient for small or simple systems

### Disadvantages

- Difficult to update if hand written
- Difficult to digest if complex system

**Flowcharts:** Depict in outline the sequence of events in a system showing document flow and the department or function responsible for each event.

### Advantages

- Easier to read and understand for larger more complex systems
- Highlights key features and controls
- Standardised
- Easy to update and little narrative

### Disadvantages

- Requires formal training to understand notation used
- Time consuming to prepare
- May miss out crucial detail because of little supporting narrative.

**Checklists or questionnaires:** The audit firm will have a standard list of control questions. The audit staff can quickly ascertain which if any, are in operation by the client. There are two types; the internal control questionnaire (ICQ) and the internal control evaluation questionnaire (ICEQ). ICQs are designed to assess whether a control exists whereas ICEQs are designed to assess whether errors or frauds are possible.

#### **Advantages**

- Comprehensive as narrative and should therefore cover all controls
- Standard questionnaires with a little tailoring for the specific business
- Easy to amend and update
- Easy to delegate
- Highlights key features and controls
- Good for preliminary assessment of controls

#### **Disadvantages**

- Is not visual or diagram based and not easy to quickly understand
- Client are able to mislead on the effectiveness of controls
- Controls operated by client may not be identified because of standardised questionnaire.
- May contain large number of irrelevant controls

## Examples of ICQ's and ICEQ's

**ICQ:**           öDoes an authorised senior person review the purchase invoices before payment is made?ö

**ICEQ:**           öCan payments be made on purchase invoices which have not been approved by an authorised senior person?ö

**ICQ's** designed to:

- Discover existence of internal controls.
- Identify possible areas of weakness.

Questions are framed in order to highlight situations where:

- **NO** sub-division of duty.
- **NO** controls.
- **NO** control by management supervision.

**ICEQ's** go further than ICQ's

- Discover whether error or fraud is possible.
- Concentrates on the important errors or frauds that might be possible and so only a handful of key control questions needed.
- Describes the nature and extent of the control that is being tested.
- Records tests conclusions and how substantive tests are affected.

## Analytical procedures

Auditors should apply analytical procedures at the planning and overall review stage of the audit.

Factor	Impact on use
Plausibility/predictability of relationships	If relationship is strong (e.g. commission on sales) analytical procedure may suffice.
Degree of disaggregation of available information	Procedures are more effective when applied to components.
Availability of financial and non-financial data	Independently prepared non-financial data will allow more effective procedures.
Relevance of information	Budgets based on expectation are more useful than targets.
Comparability of information	Broad industry data (e.g. RPI) may not be relevant to specialised industry.
Knowledge gained previously	Effective procedures are based on recognising unusual/unexpected variations. If knowledge is limited, it is difficult to know what to expect.
Reliability of various forms of data	If data used is unreliable, then any results are equally unreliable therefore procedures less effective.
Nature of enterprise and its operations	Some businesses lend themselves to analytical procedures because steady trends develop therefore easier to know what to expect and spot variations.

## Common ratios

### 1 Performance (profitability) – how well has the business done

$$\text{Return On Capital Employed (ROCE)} = \frac{\text{PBIT}}{\text{S/h funds} + \text{LTL (CE)}}$$

$$\text{Margin} = \frac{\text{PBIT}}{\text{Turnover}}$$

$$\text{Asset Turnover} = \frac{\text{Turnover}}{\text{Capital Employed}}$$

(Margin x Asset t/o = ROCE)

$$\text{Return On Equity (ROE)} = \frac{\text{PAT}}{\text{Capital Employed}}$$

### 2 Position (liquidity) – Short term standing of the business

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities}}$$

$$\text{Gearing - Equity} = \frac{\text{Debt Capital}}{\text{Shareholders funds}}$$

$$\text{Gearing ó Total} = \frac{\text{Debt Capital}}{\text{Total Capital (shareholder funds} + \text{debt capital)}}$$

$$\text{Interest cover} = \frac{\text{PBIT}}{\text{Interest paid}}$$

$$\text{Creditor days} = \text{Trade creditors} / \text{COS} \times 365$$

$$\text{Stock days} = \text{Stock} / \text{COS} \times 365$$

$$\text{Debtor days} = \text{Trade debtors} / \text{Sales} \times 365$$

**3 Potential (investor) – what investors are looking at**

Earnings Per Share (EPS) =  $\text{PAT} / \text{No. of Shares}$

P/E ratio =  $\text{Share price} / \text{EPS}$

Dividend yield =  $\text{Div per share} / \text{Share price}$

Dividend cover =  $\text{EPS} / \text{Dividend per share}$

Chapter

# 4

## Sampling, evidence and substantive testing

### **Audit sampling**

- "Audit sampling" = the application of audit procedures to less than 100% of the items within an account balance or class of transactions.
- Enable auditors to obtain and evaluate audit evidence about some characteristic of the items selected.
- To form or assist in forming a conclusion concerning the population which makes up the account balance or class of transactions.

### **Why sample?**

- It is very expensive to test every transaction in the business and therefore not cost effective.
- The financial statements would be unnecessarily delayed.
- The users of the accounts do not require 100% accuracy.
- Audit staff might miss errors because of the tediousness of testing every transaction.
- It would not add any value to find all errors which are minor.

## Design of the sample

When designing the size and structure of an audit sample, auditors should consider:

- The specific audit objectives.
- The nature of the population from which they wish to sample.
- The sampling and selection methods.

**Sample size** – When determining sample sizes, auditors should consider sampling risk, the amount of error that would be acceptable (tolerable error) and the extent to which they expect to find errors (expected error).

**“Sampling risk”** = the risk that the auditors conclusion, based on a sample, may be different from the conclusion that would be reached if the entire population were subjected to the same audit procedure.

**“Tolerable error”** = the maximum error or error rate, in the population which the auditor can accept and still conclude that the audit objective has been achieved.

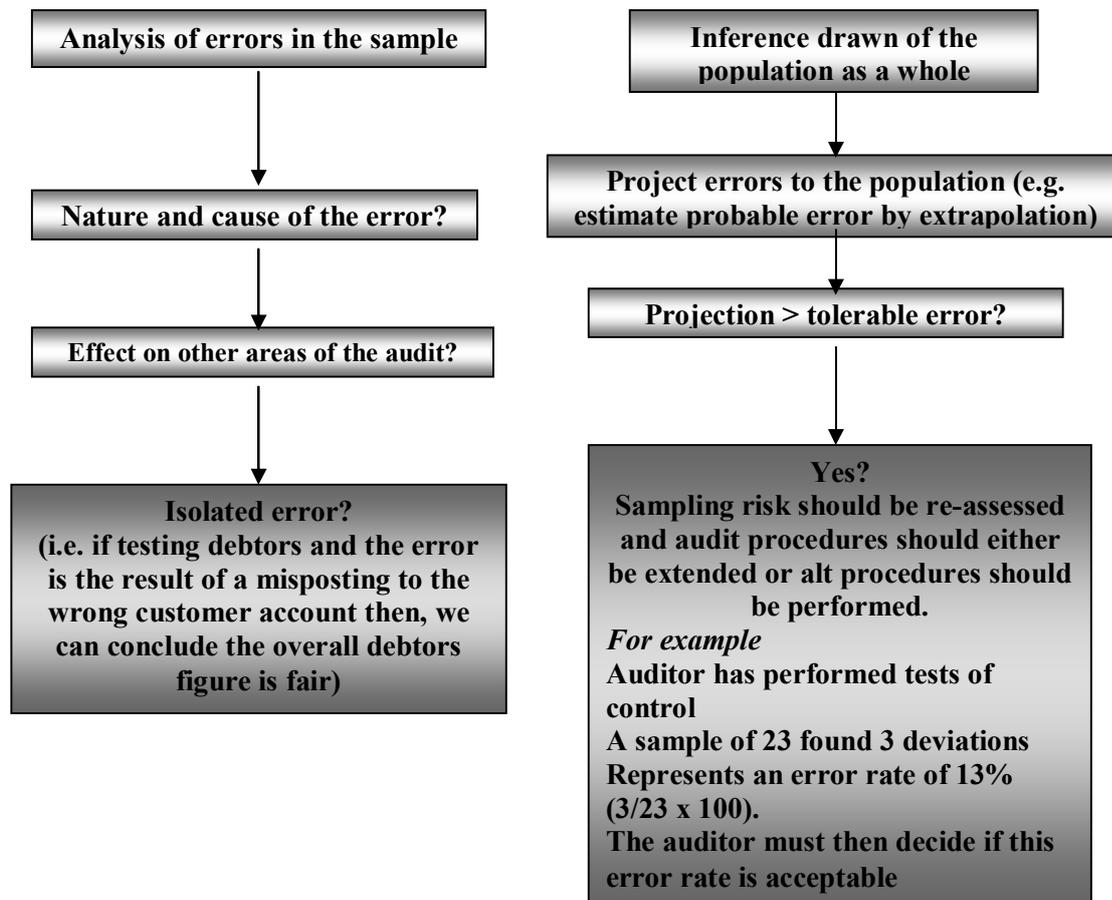
**“Expected error”** = If auditors expect errors to be present in the population, a larger sample than when no error is expected generally has to be examined to conclude.

## Selection of sample

While there are a number of selection methods, three methods commonly used are:

- **Random selection**, which ensures that all items in the population have an equal chance of selection, for example by use of random number tables.
- **Systematic selection**, which involves selecting items using a constant interval between selections, the first interval having a random start. Auditors need to ensure that the population is not structured so that the sampling interval corresponds with a particular pattern in the population.
- **Haphazard selection**, acceptable alternative to random sampling provided that the auditors are satisfied that the sample is not unrepresentative of the population. Care needs to be taken to guard against making a selection which is biased, for example towards items which are easily located, as they may not be representative.

## Evaluation of sample results



## Audit evidence

Auditors should obtain sufficient appropriate audit evidence to be able to draw reasonable conclusions on which to base the audit opinion.

Audit evidence is obtained in a number of ways, including from an appropriate mix of tests of control and substantive procedures, and is used in supporting the audit opinion reached.

Audit evidence comprises source documents and accounting records underlying the financial statement assertions and corroborative information from other sources.

## Reliability

This is a measure of quality. General presumptions (‘Rules of thumb’).

- External source > than entity (internal)
- Entity’s records are more reliable when an accounting and internal control system operates effectively
- Auditor obtained evidence > entity obtained
- Documentary > oral
- Originals > photocopies, telexes, faxes

## Types of tests to obtain audit evidence:

### Tests of Control

Tests to obtain audit evidence about the **effective operation of the accounting and internal control systems** that is properly designed controls identified in the preliminary assessment of control

### Substantive Tests

**Tests to obtain audit evidence to detect material misstatements in the financial statements. Using analytical procedures and other substantive tests (e.g. Test of details of**

## Examples of tests of controls

- Check bank reconciliation has been reconciled as approved by chief accountant.

## Examples of substantive tests

- Agree a sample of wages payments to the existence of these individuals and personnel records.

## **Procedures for obtaining audit evidence**

- **Inspection**

Examining records, documents or tangible assets.

- **Observation**

Looking at a process or procedure being performed by others.

- **Enquiry & Confirmation**

Seeking information of knowledgeable persons inside or outside the entity.

- **Computation**

Consists of checking the arithmetical accuracy of source documents and accounting records or performing independent calculations.

- **Analytical Procedures**

Analysis of relationships.

## **Substantive procedures (financial statement assertions)**

Financial statement assertions are the representations of the directors which are embodied in the financial statements. These are:

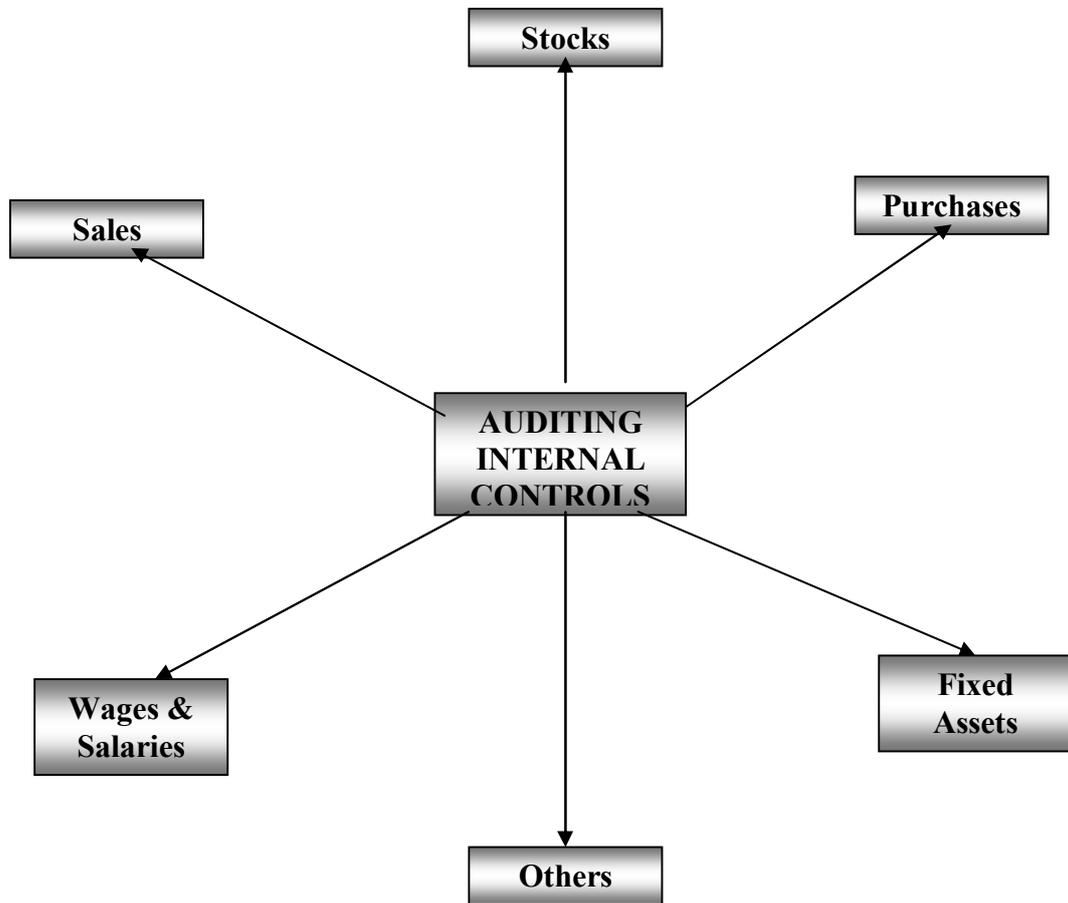
- **Completeness & Occurrence**  
All assets, liabilities, transactions or events have been disclosed and transactions or events took place relevant to the entity during the period.
- **Obligations & Rights**  
Liabilities and assets belong to client.
- **Valuation & Measurement**  
All assets, liabilities, revenue and expenses have been recorded at an appropriate carrying value and in the appropriate period.
- **Existence**  
Liabilities and assets do physically exist on a date given.
- **Disclosure & Presentation**  
All items have been described and classified adequately in accordance with reporting standards.



Chapter

5

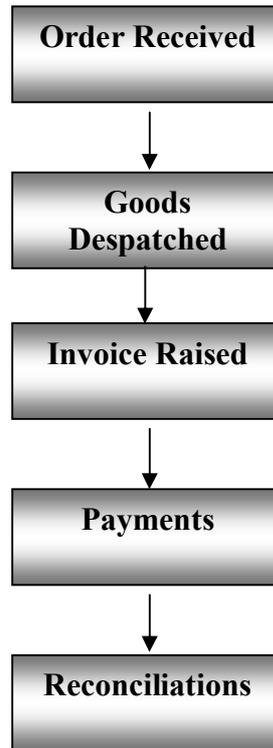
# Internal controls for key cycles



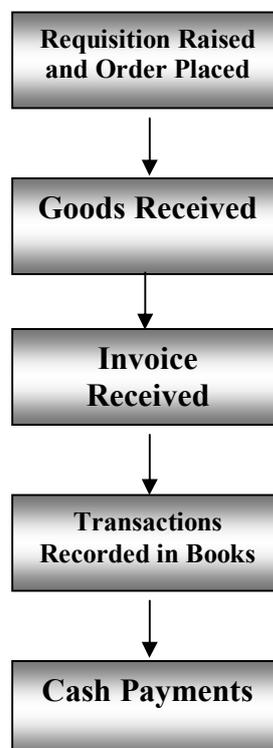
### **I.C. Checklist**

- **D**ocumentation
- **S**egregation
- **A**uthorisation
- **R**evue

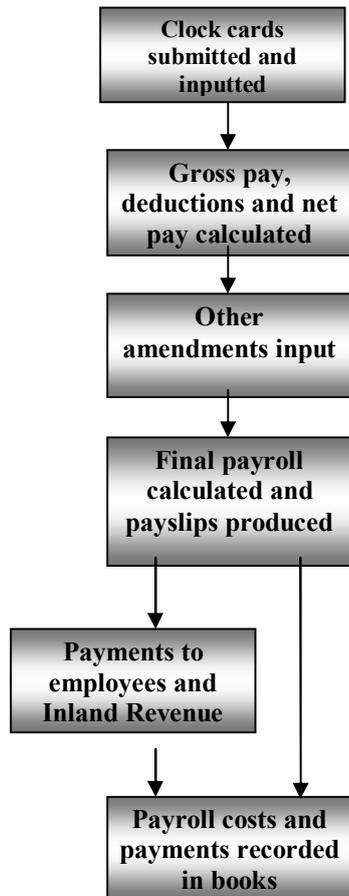
## Sales cycle



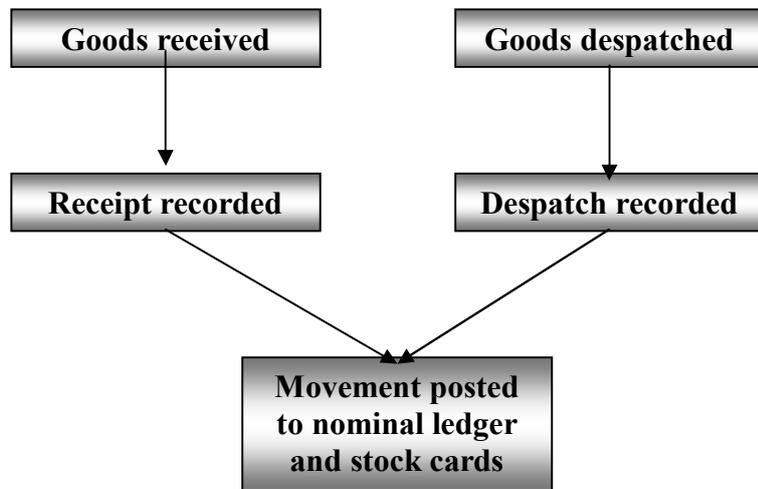
## The purchase cycle



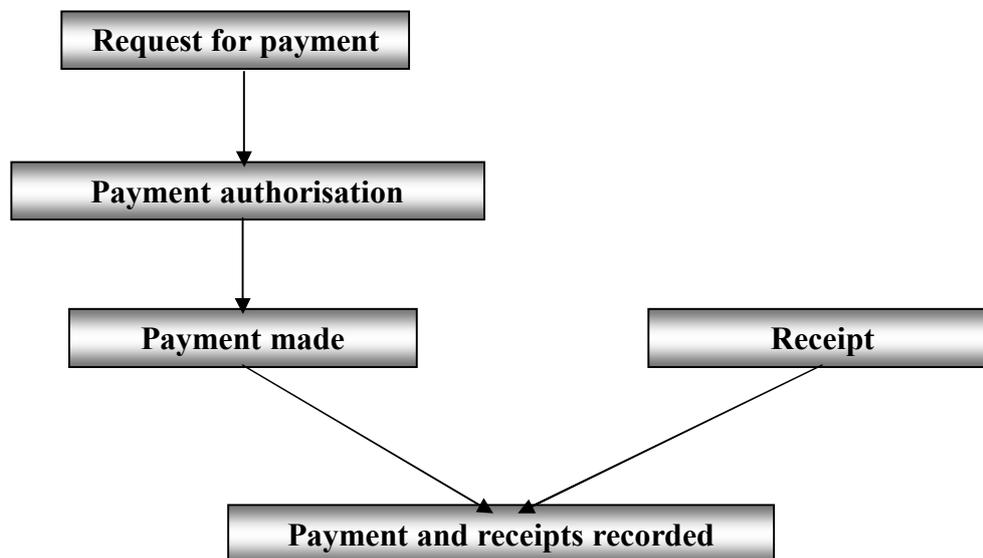
## The payroll cycle



### The stock cycle



### Bank and cash



### **Reports to directors or management**

Internal auditors should communicate relevant matters relating to the audit of the financial statements to those charged with governance of the entity. Such communications should be on a sufficiently prompt basis to enable those charged with governance to take appropriate action.

### **Points for inclusion**

- Design and operation of the accounting and internal control systems and suggestions for improvement.
- Other constructive advice (e.g. economies and efficiencies).
- Adjusted and unadjusted errors, accounting policies and practices.
- Report should also state that it is not a complete list of all weaknesses.
- Report should also request a reply stating the course of action management intend to take.

Chapter

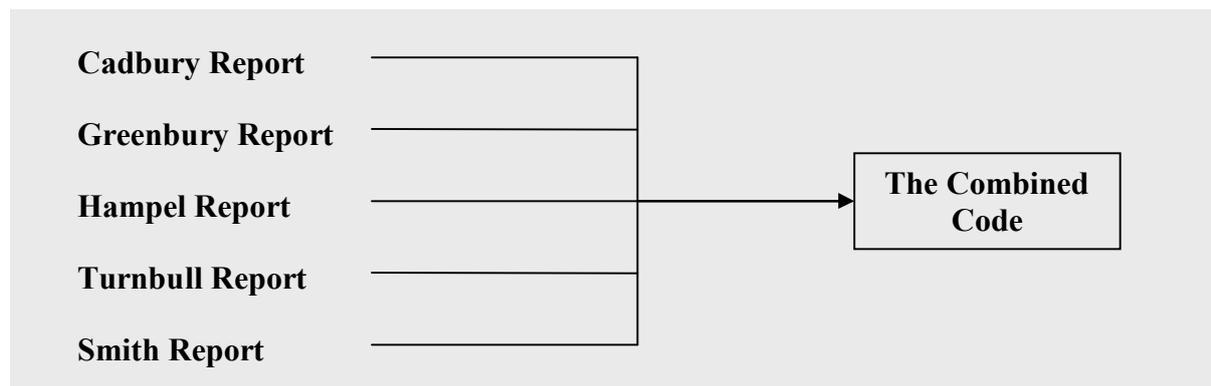
# 6

## Corporate governance, ethics & internal audit

## Corporate Governance

“The corporate governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources. The aim is to align as nearly as possible the interests of individuals corporations and society”  
(Sir Adrian Cadbury in 'Global Corporate Governance Forum' World Bank 2000)

### UK corporate governance reporting and recommendations



### Cadbury and Greenbury report recommendations

- Split chairman and chief executive role.
- Regular and more formal meetings.
- Directors remuneration clearly shown within the published accounts.
- Pay awards to be decided by a remuneration committee using non-executive directors only.
- Establish an audit committee using non-executive directors only.
- Every company should have at least 3 non-executives directors.

The Hampel report incorporated the recommendations from both the Cadbury and Greenbury Committees as well as amendments from the London Stock Exchange; it was published as the Combined Code in June 1998.

### Benefits of good corporate governance

- ✓ Greater fairness and openness of directors.
- ✓ Greater public confidence in companies.
- ✓ Reduced risk for investors and other stakeholders.
- ✓ Lower risk of strong CEO domination.
- ✓ Transparency, timely and clearer communication of information.
- ✓ Improves performance and leadership by the board.

### Higgs report (2003)

- Focuses on the role of the non-executive.
- Non-executives have the inconsistent role of both reviewer of executives and working with executives to consult on strategy for the company.
- Non-executives should have four roles:
  - **Strategist** ó challenge, help and develop company strategy.
  - **Performance** ó has mgt met agreed goals and objectives?
  - **Risk** ó is the financial information accurate and are the financial controls and risk management systems adequate?
  - **People** ó to determine remuneration of the executives and a main role in appointments, removals and successions of executives.
- Board performance evaluation should be devised by the chairman.
- Should improve effectiveness, promote strengths and address weaknesses.
- Overall board performance disclosed to board, but individual performances are confidential.

### Smith report (2003)

- Focuses on the audit committee.
- Chairman cannot be a member of the audit committee.
- At least one qualified member with relevant experience should be on the committee.
- Appointments should last for 3 years but extendable.
- Committee should be independent of management to protect interests of shareholders.
- Any disagreements should be resolved at board level.
- At least three meetings a year (audit plan review, interim statement review, full annual report review).
- At least once a year with the external and internal auditors without management present to discuss audit issues.
- Key roles are oversight, assessment and review, not preparing financial statements (mgt responsibility) or preparing the audit plan and carrying out the audit (auditor responsibility).
- The committee should review the company's internal financial controls.
- The committee should monitor and review the internal audit function.
- The committee is responsible for the oversight of the external auditors and have procedures to ensure their independence.
- Chairman of the committee should be present at AGM to answer audit related issues.
- Details of the committee's role, names and qualifications of members, how responsibilities were discharged, non-audit services provided by external auditors and how independence was safeguarded.

## **Summary of the principles for good governance**

### **Directors responsibilities**

- The Board should be effective to lead and control the company.
- Clear division of responsibilities between Chairman and CEO to ensure balance of power and authority.
- Board balance e.g. executive and non-executive roles.
- Supply of transparent information.
- Timely and of appropriate quality of information.

### **Appointment of directors**

- Formal and transparent procedures.
- Re-election e.g. all directors at regular intervals and at least every three years.

### **Directors remuneration**

- Level and make-up of remuneration should be sufficient to attract and retain but not more than necessary.
- A proportion linked to performance.
- Formal and transparent procedure fixing remuneration of each director.
- Disclosure e.g. details of the remuneration of each director.

### **Relations with shareholders**

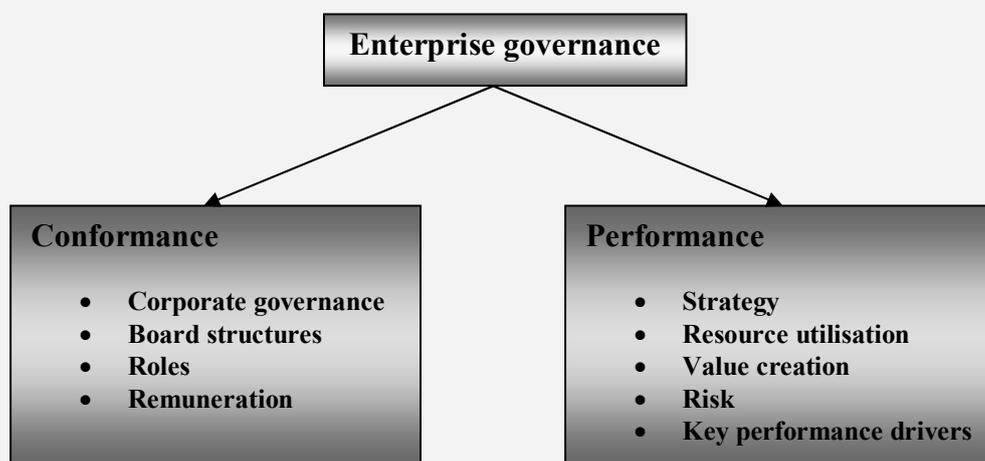
- Dialogue with institutional shareholders.
- Constructive use of the Annual General Meeting (AGM).
- To communicate with private investors and encourage their participation.

### **Accountability and audit**

- Financial reporting e.g. balanced and understandable assessment of the company's position, performance and prospects.
- Maintain effective internal controls.
- Audit committee for maintaining an appropriate relationship with the auditors.

## Enterprise governance

This is a report published by CIMA and IFAC in 2004 “*Enterprise governance: Getting the balance right*”.



## International perspective on corporate governance

This is of paramount practical concern for policymakers, managers, accountants and others since they are affected by the regulatory regimes and changes of regulations on a daily basis in their working environment.

### Organisation for economic co-operation and development (OECD)

- Rights of shareholders e.g. one share equals one vote for all shareholders.
- Equitable treatment of shareholders e.g. protection of minority interests.
- Equitable treatment of all stakeholders.
- Accurate and timely information for users of published information.

### US, the Sarbanes-Oxley Act (2002)

- Legal requirement for all companies with a US listing.
- Attempts to address auditor independence and corporate governance issues.
- Places restrictions on the nature of non-audit services that can be performed by auditors. Audit committees must approve any allowed additional services.
- Audit committee members should be independent, and are responsible for the appointment, remuneration and overseeing of external auditors.
- Audit committee must establish rules for the protection of whistleblowers.

### **South Africa, the King Report (2002)**

- Broader stakeholder approach to governance.
- Considers social, environmental, economic aspects of company activities (HIV/AIDS impact, black economic empowerment, equal opportunities and human capital development)
- Accountability and independence of the board emphasised more.
- Delegation did not diminish ultimate responsibility of the board.
- Board is responsible for risk management processes including internal audit.
- Openness to all stakeholders

### **Ethics and social responsibility**

**Corporate social responsibility (CSR)** is concerned with being aware of the impact of actions on others, and to act in the best interests of society.

**Ethics** is concerned with rules or morals about the right behaviour and conduct, it is one part of CSR

#### **Advice on how to be more ethical and socially responsible**

- Good public relations.
- Protection of the ecological environment.
- Control energy consumption, waste and emissions.
- Recycle all packaging material.
- Support charities and the local community.
- Good conditions of work provided for employees.
- Embody ethical culture through a mission statement and training.
- Set and publish aims and objectives to achieve greater CSR.

## **Ethics for members of CIMA**

The CIMA Code of Ethics for Professional Accountants sets out the fundamental principles of professional behaviour that members and students are required to follow. Other accountancy bodies and professions such as the ACCA, ICAEW and AAT, have similar standards of behaviour and conduct.

### **Code of conduct for CIMA management accountants**

- Integrity
- Objectivity
- Professional competence and due care
- Professional behaviour
- Quality to the client
- Confidentiality
- Serve the public interest

### **Code of conduct ensures**

- A positive global image to CIMA
- Protection for public interest.
- Prevention and limitation of malpractice.
- Repeat business in the long-term for CIMA and CIMA members

## Comparison of external and internal audit

Internal audit	External audit
<p>Requirements are very far reaching:</p> <ol style="list-style-type: none"> <li>1) VFM audits.</li> <li>2) Post completion audits ó How effective as a project been in achieving its desired objective?</li> <li>3) Management audits ó How effective is mgt and corporate structure in achieving objectives and policies?</li> <li>4) Quality audits ó How is the company improving the final product to the customer?</li> <li>5) Risk audits ó How are high risk areas are determined and mitigated?</li> <li>6) Improvement of internal controls.</li> <li>7) Substantive testing.</li> <li>8) Review of financial results.</li> <li>9) Fraud prevention.</li> <li>10) Improving financial accounting systems.</li> <li>11) Coordinating with external auditors.</li> <li>12) Social &amp; environmental audit ó e.g. pollution targets being met, employment, health &amp; safety, contribution to the community?</li> </ol> <p>They are employees of the company but must remain independent and objective.</p> <p>Appointed by management or an audit committee.</p> <p><b>Their scope covers</b></p> <ol style="list-style-type: none"> <li>1. Accounting systems.</li> <li>2. Internal control systems.</li> <li>3. Compliance with the law.</li> <li>4. Improving efficiency.</li> <li>5. Protecting against fraud.</li> <li>6. Cost reduction.</li> <li>7. Risk assessment.</li> <li>8. Safeguarding assets.</li> </ol> <p>They help discharge the above legal responsibilities of senior management and improve the business efficiency and effectiveness.</p> <p>They report to the management of the company.</p> <p>No formal qualifications required.</p>	<p>Companies Act requirement for companies above a certain turnover level to appoint external auditors.</p> <p>They go through the audit process and express an opinion on whether the financial statements are true and fair to the shareholders in an audit statement.</p> <p>It is an independent examination by experts.</p> <p>True and fair mean that the financial statements a materially free from error or omission.</p> <p>Their responsibility is not to produce the accounts, not to spot fraud; this is the director's responsibility.</p> <p>Appointed by the shareholders.</p> <p>They report to shareholders.</p> <p>Qualified member of a RSB. Independent and external to company.</p>

### Using the work of the internal auditor by external auditor

When obtaining an understanding and performing an assessment of the internal audit function, the important criteria are:

- **Organisational status** ó Internal audit's specific status in the organisation and the effect this has on its ability to be objective.
- **Scope of function** ó The nature and extent of the assignments which internal audit performs.
- **Technical competence** ó whether persons having adequate technical training and proficiency as internal auditors perform internal audit work.
- **Due professional care** ó Whether internal audit work is properly planned, supervised, reviewed and documented.

### Fraud

**'Distortion of results for individual benefit or theft by misappropriation of assets'**

- Ghost employees.
- Payroll fraud.
- Collusion with third parties.
- Teeming and lading.
- Inflating expense claims.
- Misappropriation of assets.
- Failure to record a transaction.



Chapter

7

# What is information?

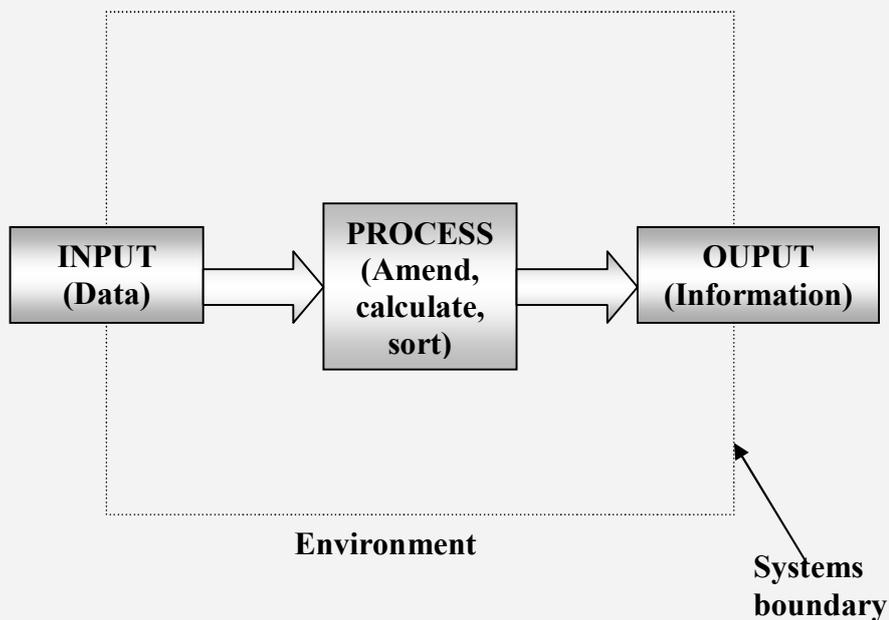
### **Information**

Data which has been processed in a meaningful way e.g. summarised, formatted, tabulated or filtered, so that it is understandable by its intended recipient.

### **Information system**

A system of persons, data records and activities, manual or computerised, that process, collect and maintain information, to provide it to staff or other stakeholders.

The primary role of information systems is to support the business strategy and goals of the organisation. The business strategy and goals of the organisation should always be driving the information strategy of the organisation, never the other way around.



## Characteristics of good information systems

- A Accurate
- C Complete
- C Cost beneficial
- U User friendly
- R Relevant
- A Authoritive
- T Timely
- E Easy to use

Quality	Strategic planning	Operational control
<b>TIME PERIOD</b>	FORECAST <—————>	HISTORICAL
<b>TIMELINESS</b>	IMMEDIATE<—————>	DELAYED
<b>OBJECTIVITY</b>	SUBJECTIVE <—————>	OBJECTIVE
<b>QUANTIFIABILITY</b>	QUALITATIVE<—————>	QUANTITATIVE
<b>ACCURACY</b>	APPROXIMATE <—————>	ACCURATE
<b>CERTAINTY</b>	UNCERTAIN<—————>	CERTAIN
<b>COMPLETENESS</b>	PARTIAL<—————>	COMPLETE
<b>BREADTH</b>	BROAD<—————>	SPECIFIC
<b>DETAIL</b>	LITTLE DETAIL<—————>	HIGHLY DETAILED

## Quantitative and qualitative approaches

Quantitative information is concerned with information that can be easily expressed in the form of numbers e.g. absolute measures, relative percentages, ratios, indices or fractions. Qualitative information is information that cannot be easily expressed in the form of numbers, information that would be hard to quantify e.g. soft opinions, preferences and feelings of customers about the perception of brands or product features offered to them.

**Financial measures** are quantitative or qualitative measures which directly use information from the financial statements.

**Non-financial measures** are quantitative or qualitative measures that do not directly use information from the financial statements.

Information can also be:

- **Informal** – information found through haphazard and unofficial means.
- **Formal** – information found using methodical and official means.
- **Internal** – information found within an entity.
- **External** – information found outside an entity.

## Levels of strategy

Levels of hierarchy or scalar chain exist within an organisation in order to cascade decisions, instructions, plans and objectives top-down within an organisation.



## **Ways of valuing proposed systems**

### **The feasibility study**

A feasibility study is the consideration of a proposed programme, action or plan. It is a preliminary study undertaken to determine and document a projects viability.

### **Types of feasibility**

- Economic feasibility
- Business (operational) feasibility
- Technical feasibility
- Social feasibility
- Schedule (time) feasibility
- Legal feasibility
- Environmental feasibility

### **Cost benefit analysis (CBA)**

An economic evaluation technique which compares the costs associated with a proposed investment with the benefits that investment will return. Both tangible and intangible factors would be considered.



Chapter

# 8

## IS, IT and IM strategies

### **The three elements of IT strategy**

- Information systems strategy - **WHAT**
- Information management strategy - **WHO**
- Information technology strategy - **HOW**

### **Nolan's 6-stage hypothesis**

- Initiation
- Contagion
- Control
- Integration
- Data administration
- Maturity

### **Michael Earl reasons to have an IT strategy**

- IT involves high costs
- IT is critical to the success of many organisations
- IT can be used as part of a commercial strategy to gain competitive advantage
- IT impacts upon customer service
- IT impacts upon all levels of manager
- IT could mean a revolution in the way information is created and presented
- IT involves many stakeholders

### **Developing an IT strategy**

1. Determine the business strategy, goals and objectives.
2. Define information needs and identify information sources.
3. Position audit and gap analysis undertaken for existing systems.
4. Heavy end user consultation and participation.
5. Change management and implementation
6. Review and control progress to ensure project objectives have been met

## Earl's Grid for assessing information systems

		Technical Quality	
		Low	High
Business Value	Low	<b>Divest</b> A costly and unused system.	<b>Reassess</b> Heavy user involvement to improve the value of information created and presented.
	High	<b>Renew</b> Invest in a better IT infrastructure.	<b>Maintain and enhance</b> Regular review and upgrade to maintain current position.

### Parsons' IS strategies

- Centrally planned
- Leading edge
- Free market
- Monopoly
- Scarce resource
- Necessary evil

### Goals

What the organisation plans or intends to achieve. Normally converted to objectives which measurability and timescale. Long-term and sufficient to satisfy the mission statement.

### Critical success factors (CSFs)

Key organisational goals that if achieved will make the organisation more successful.

### Objectives

A measurable goal with a clearly defined timescale to achieve it. Objectives should be SMART (specific, measurable, agreed, realistic and time bound).

### Key performance indicators KPIs (performance measures)

Objectives which have measurability and time scale.

### McFarlan's grid or the 'application portfolio'

		Strategic importance of current IT systems	
		Low	High
Strategic importance of planned IT systems	High	<h3>Turnaround</h3> <p>Limited importance today but predicted to become more strategically important in the future e.g. high potential for future competitive advantage. New and highly innovative systems normally at early stages of development.</p>	<h3>Strategic</h3> <p>The business depends on these systems for existing competitive advantage and will continue to do so in the future. Always at the heart of the organisations success with continuous redevelopment required.</p>
	Low	<h3>Support</h3> <p>Not strategically critical and does not contribute significantly to the existing or future success of the organisation. Not critical and mainly exist for economic benefit e.g. increase efficiency and reduce headcount for data processing.</p>	<h3>Factory</h3> <p>Currently viewed as strategically important and necessary for existing competitive success or advantage, but predicted that this significance in future is likely to disappear.</p>

Chapter

# 9

# Information systems

### The role of information systems

The primary role of information systems is to support the organisations business strategy and goals. The business strategy and goals of the organisation should always be driving the information strategy of the organisation, never the other way around.

### Management information systems

Management Level	OPERATIONAL	TACTICAL	STRATEGIC	ALL LEVELS
Information System	Transaction processing systems (TPS)	Decision support systems (DSS)	Executive information systems (EIS)	Expert Systems (ES)

### Knowledge management systems (KWS)

KWS are information systems that facilitate the creation and integration of new knowledge into an organisation. Knowledge management is the process of trying to collect, store and use knowledge within the organisation.

#### Types of KWS

- **Knowledge distribution systems** e.g. e-mail, scanners, e-fax, voice mail and document image processing (DIP). Groupware software packages like Lotus notes can help to manage e-mail, calendars, diaries and reminders.
- **Knowledge sharing systems** e.g. expert systems, databases, intranets and extranets.
- **Knowledge creation systems** e.g. computer aided design (CAD) and virtual reality systems (VR).

### **Expert systems**

Software that behaves similar to the way a human expert would within a certain field of knowledge e.g. legal, medical, insurance or credit risk assessment. The expert knowledge, rules and facts are pre-programmed a memory to facilitate artificial intelligence by supporting decision making.

### **Enterprise-wide systems**

Also referred to as enterprise resource planning (ERP) or enterprise computing. Enterprise-wide systems are information systems that are used throughout a company or enterprise, to manage and coordinate resources, information and functions of a business.

### **Materials requirement planning (MRP I)**

An inventory control system which provides an automated list of components and materials required for the type and number of products entered.

### **Manufacturing resource planning (MRP II)**

A system that incorporates not only material requirements, but all manufacturing resources such as different labour types, machine types and other manufacturing resources required for the type and number of products entered.

### **Computer-integrated manufacturing (CIM)**

Manufacturing supported by computers. The total integration of computer aided design, manufacturing, quality control and purchasing in one centralised system.



Chapter

# 10

## Risk and control in information systems

## **Centralisation of IT department or activities**

### **Advantages of a centralised IT function**

- ✓ Economies of scale.
- ✓ Better integration and compatibility of information systems.
- ✓ Higher motivation of IT staff.
- ✓ Can avoid duplication of effort.
- ✓ Strategic view.

### **Benefits of in house developed information systems**

- ✓ Better understanding of information needs.
- ✓ Strategic control.
- ✓ Less risk to the security.
- ✓ More effective support to end users.

## **Decentralisation of IT activities e.g. end user computing**

End-user computing is the direct hands on approach that end users have over the development and use of IT.

### **Benefits of end user computing**

- ✓ Creativity and innovation.
- ✓ Increases productivity of information systems.
- ✓ End-user satisfaction –ownership and motivation

### **Limitations of end user computing**

- ✗ Lack of training and experience.
- ✗ Lack of documentation.
- ✗ Incompatibility of different systems.

### **Enid Mumford's 3 levels of participation**

- Consultative participation.
- Representative participation.
- Consensus participation.

### Charging for IT 'in-house'

- Service centre e.g. free to departments.
- Cost centre e.g. charged at cost to departments.
- Profit centre e.g. charged at external market price to departments.
- Hybrid centre e.g. combination of two or more of the above.

### The role of information centres

With large amounts of end-user computing it is likely that an information centre will be set up to support end users. This would be a small strategic unit of IT staff, with good business and technical awareness to provide support.

### Steering committees and the feasibility study group

Steering committees e.g. strategic or project boards are recommended to monitor and control the activities of a feasibility study group. Typically a strategic board would consist of senior directors, management and consultants.

#### Feasibility studies

A feasibility study is the consideration of a proposed programme, action or plan. It is a preliminary study undertaken to determine and document a project's viability.

### IT outsourcing (client-vendor relationships)

Examples include the outsourcing of system maintenance, development or data processing agreements with third party organisations, an entire IT department could be outsourced. IT outsourcing can allow management to start with a clean sheet and eliminate what they often see as an internal irritant.

#### Advantages

- ✓ Save overhead
- ✓ Reduce the complexity
- ✓ Management can focus on its core competencies
- ✓ Flexibility of using outsourcer

#### Disadvantages

- ✗ Loss of strategic control
- ✗ Over reliance
- ✗ Loss of competitive advantage
- ✗ Internal redundancy
- ✗ Risk to security
- ✗ Failure of outsourcer

### **Management of vendors**

- Policies, procedures and effective management.
- Planned selection criteria.
- Tender and visiting process.
- References.
- Contract agreements.
- Penalties and cancellation terms.

### **Characteristics of a good service level agreement**

- Terms and conditions.
- Exit route for non performance.
- Timescale of agreement.
- Copyright and ownership.
- Procedures for control.
- Contact details.

### **Criteria for evaluating suppliers**

- Invitation to tender documents.
- Warranty and support.
- Training assistance.
- Cost and composite of cost.
- Reliability and solid track record.

### **Security within an IT environment**

- Prevention e.g. eliminate risk.
- Detection e.g. catch the culprit.
- Deterrence e.g. make the culprit think twice.
- Recovery e.g. what we do if all else fails.

### **Risks to IT systems**

- ✘ Human error e.g. incorrect transactions entered, failing to correct errors.
- ✘ Technical error e.g. system malfunction.
- ✘ Natural disaster e.g. explosion, lightning, fire or flood.
- ✘ Deliberate action e.g. fraud.
- ✘ Commercial espionage e.g. competitors hacking customer information.
- ✘ Malicious damage e.g. hacking/virus/disgruntled employees etc.
- ✘ Industrial action e.g. key 24/7 personnel.

### **Information processing risks**

- Employee maliciously deleting or changing information held on the system.
- Employee accidentally deleting or incorrectly inputting information.
- External hackers infiltrating the system and deliberately sabotaging (viruses) information of stealing it.
- Hardware or software failure resulting losses to the organisation (e.g. wedding video and photographer losing the clients wedding footage would be irreplaceable).

### **Hackers**

This is the unauthorised access of systems by individuals to corrupt or steal information from an organisation.

### **Viruses**

This is a piece of software that is designed to infect a system. The main aim is to avoid detection, replicate and cause damage.

### **Unlicensed use of software**

Software sold to individuals or companies allows them to use the software for their own purposes as purchasers are allowed an authorised license and have not bought the software rights.

## **Computer theft**

Controls to reduce this risk:

- A fixed asset register should be maintained for all computer equipment.
- Details should include make, model serial number, departmental numbers, assigned to individual and location.
- All equipment should be locked away if not in use.
- Bolt down larger pieces of equipment to fixtures and fittings.
- Employ security guards and CCTV.

## **Computer fraud**

Controls to reduce this risk:

- Segregation of duties.
- Access restriction e.g. user ID and password.
- Passwords should be regularly changed, not divulged to colleagues and should not be written down.
- Access logging e.g. automatic list of any attempts made by unauthorised users.
- Audit trail e.g. history of transactions and audit trail to detect fraud and errors.
- Internal audit function e.g. computer audit software and skills.

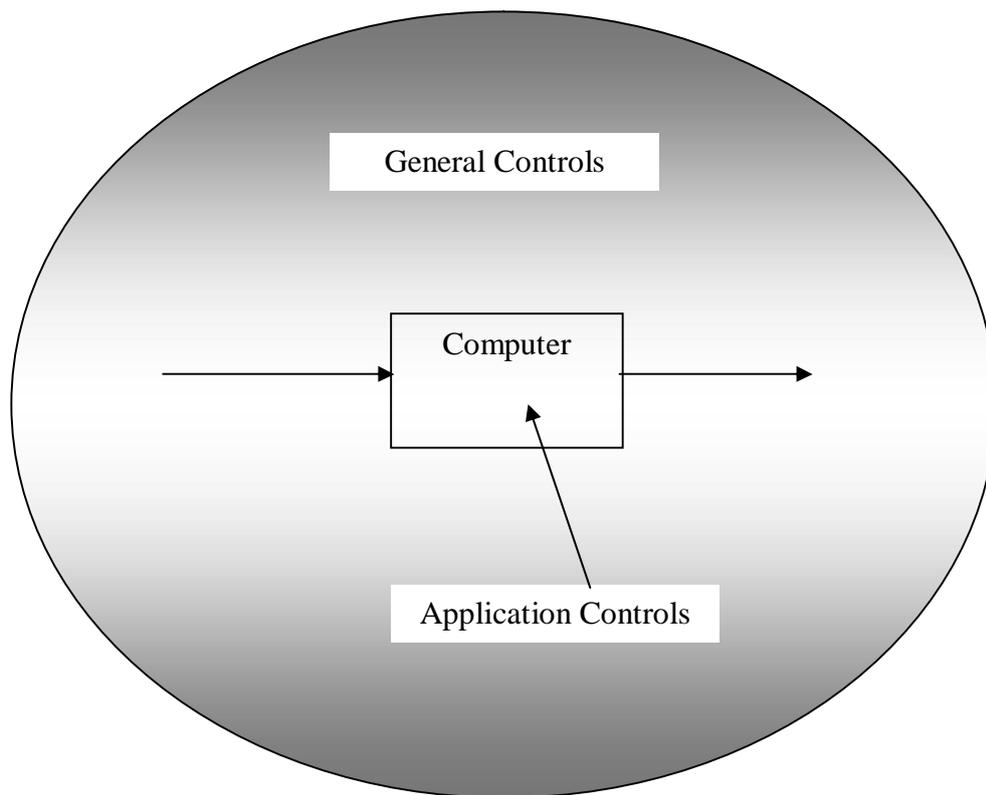
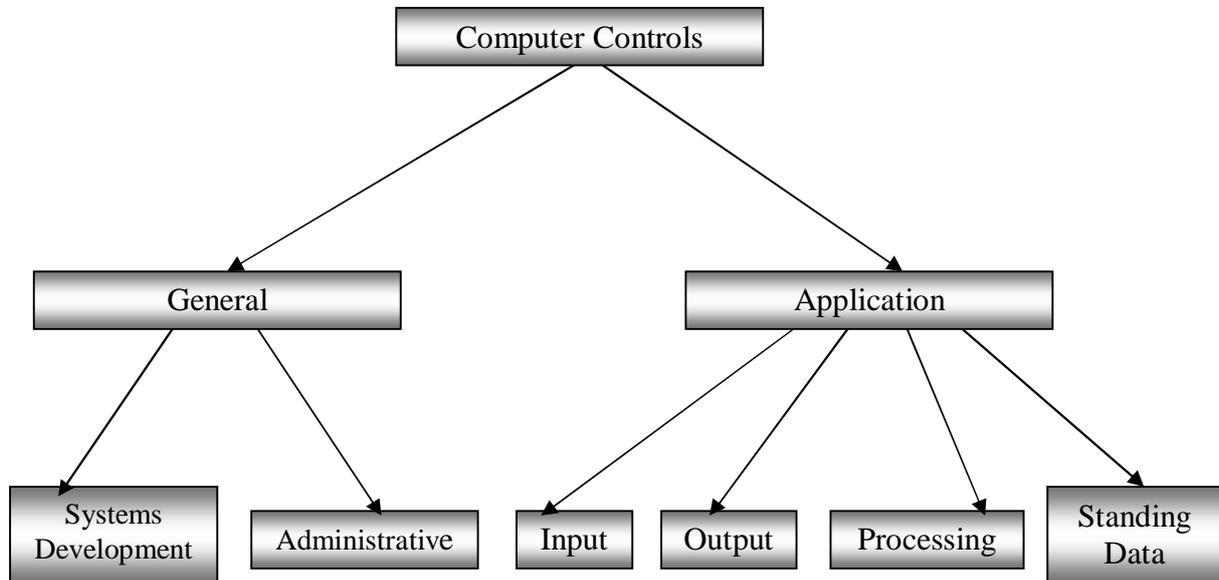
## **Other security controls**

- Security policy.
- Security organisation.
- Personnel security.
- Physical and environmental security.
- Access controls.
- System development and maintenance.
- Business continuity management.
- Compliance with the law.

Chapter

11

# The internet and auditing the system



## Types of computer controls

Two main categories:

- (a) **General controls:** controls designed to support the computer system's environment. These are "**AROUND**" the computer system to ensure that it is free from human error, technical error, natural disasters, and deliberate actions.
- (b) **Application controls:** These are found **WITHIN** the computer system itself. These are user (i.e. manual) controls and programmed procedures (i.e. steps in computer programs) which directly control the data in computer applications.

When **auditing a computer system** there are two approaches:

- Auditing **AROUND** the computer system ó testing the controls around the system.
- Auditing **THROUGH** the computer system ó testing the controls in the system.

**Strong general controls are just as important as strong application controls**, and will undermine a system if poor.

## General controls

### *System controls (examples)*

- Good project manager.
- Experienced project team.
- Good planning, monitoring and control over system development.
- Standards using methodologies like SSADM.
- Proper documentation of systems and programs.
- Approval of end user before implementation.

### *Administrative controls (examples)*

- **Physical access** controls.
- Hierarchy **password** protection.
- **Back up files** on a regular basis.
- **Access logs** which log users usage of system, when and what files they have accessed.
- **Job scheduling** which will detail in advance who will be using the system.
- **Dedicated terminals.** Specific terminals which are designed only to access certain areas of the system.

## Application controls

### *Input controls*

- **Data verification** (if customer code does not exist you cannot update).
- **Data validation** - check digits (add the supplier code across and match to the last digit displayed by the computer)
- **Sequence checks** ó a break in number sequence will highlight a possible error.
- **Batch controls** ó manually counted items are entered on to the system. Once all items have been inputted on to the system it will compare the current batch total with that total which was entered on the system initially before this batch was inputted. The system will only accept the batch if both agree.

**Controls over processing** (ensure data was processed, such as amended, sorted or calculated accurately once data was input into the system).

- **Summary processing** ó e.g. check total depreciation equal to summary of elements.
- **Batch reconciliation produced after processing.**
- **Standardisation of routines.**
- **Regular testing using dummy data.**
- **Reconciliation's to hard copies such as bank statements or supplier statements.**
- **Exception reporting of processing errors.**

### *Controls over standing data (master files)*

- **Manual periodic printout of data and checked** by responsible official of company.
- **Passwords** given which **restricts access** to this area.
- **Check amendments** to data by responsible official of company.
- **Automated list produced by computer of changes** (additions and deletions) on a regular. List reviewed to ensure properly authorised by responsible official of company.
- **Regular back up** (clear labelling of disks and kept in a secure a fireproof place).

## CAAT's

CAAT's involve using a computer to perform audit work. Computers can be used to perform either **substantive tests** or **tests of control**.

### **Audit software (substantive tests)**

Audit software is software specifically designed for audit purposes. It is used to process the client's data in order to check that the figures themselves are correct.

Typically audit software is used for:

- (a) **Selecting a sample** of records from a file (e.g. random selection of despatched notes or selection of all stock items valued over a certain substantive amount).
- (b) **Reperforming** computations and calculations (e.g. verifying the accuracy of an aged debtor's listing or stratification of a stock file).
- (c) **Reorganising** data into a form for audit use (e.g. stock aging balances by turnover of large balances).
- (d) **Comparing** two or more different files (e.g. comparing sales invoices with the sales ledger to ensure that all invoices have been posted, or comparing stock held at two different dates).

### **Using the clients own system (tests of control)**

This will require significant co-operation from the client, especially in terms of computer access time.

Typical uses:

- (a) **Test data** ó data generated by the auditor which is then processed using the client's systems.

**“Live”** ó Data submitted during normal production run but, may corrupt files and must be retrieved at end of run.

**“Dead”** ó Data submitted outside normal processing but, scope for client manipulation and may not be sufficient computer time available.

- (b) **Embedded test facilities**

Test data and observation of expected results ó auditing through the computer.

- **Integrated test facilities (ITF)** can release test or dummy data frequently throughout the year with the results determined in advance. This ensures processing is working effectively by comparing actual results to expected. Results are then reversed within the system.
- **Systems control and review files (SCARF)** automatically have transactions posted to this file if they exceed a range or limit that the auditor has set up in advance. This can then be scrutinised to spot irregularities.

### **The internet**

A global network connecting millions of PCs around the world. The internet allows WAP phones and other suitably equipped PC devices to send and receive information.

### **The intranet**

An organisations own version of the internet using its own internal networked computers e.g. an internal ‘mini internet’ An internal, private and restricted access network that works like the Web, but the system is not on it.

### **Web 2.0 tools**

Web 2.0 tools refers to any computer application that is web-based and will support collaboration, interaction and sharing of information over the world wide web. Web 2.0 tools represent the second generation of software for the world wide web, moving away from static web pages to dynamic and shareable content. They enable people with no specialised technical knowledge to create their own websites, publish, create and upload audio and video files, share photos and information and many other tasks.

### **Electronic business (E-business)**

Conducting business via electronic media e.g. telephone, fax machines, computers, video-teleconferencing etc.

#### **E-commerce**

The process of buying and selling goods and services electronically using website technology.

### **EDI**

EDI is a computer-to-computer data interchange (fixed point to point system). An agreed format for parties, for the sending and receiving of information, this would require investment from both parties and can be very costly. EDI is the electronic invoicing, billing and payment of transactions between the organisation and its suppliers or customers. An extranet is a form of internet based EDI. Both aim to achieve a paperless system of information exchange.

### **Extranets**

A system whereby customers or suppliers link intranets for mutual benefit, to exchange information or send, order and receive transactions electronically. An extranet is an intranet, but accessible to authorised outsiders (or at least some parts of it) by using valid usernames and passwords.

### **Value added networks (VANS)**

A VAN is a third-party network service provider which offers access to specialised services, normally for a fee e.g. Reuters. Customers either purchase leased lines or use dial-up to access the network.

Chapter

# 12

# Risk management

**Risk** is when the actual outcome differs to the expected outcome.

**Risks can be “pure”** - risks that will only have a chance of a bad or harmful outcome. They do not have any chance of having a good or beneficial outcome, for example this risk of flooding or a natural disaster.

**Speculative risks** - have the possibility of a gain as well as possibility of a loss

### **Examples of different types of risk**

- General business risks / Economical risk
- Financial risk
- Trading risks
- Cultural risk
- Country risk
- Political, legal, regulatory, economic and environmental risk
- Technological risk
- Fraud risk
- Currency risk
- Interest rate risk

### **Fraud risk**

A fraud is a deliberate act to obtain an advantage or gain through any means of deceiving the other party.

### **Types of fraud**

- Teeming and lading
- Non-existing employees
- Other payroll
- Stealing cheques
- Expense claims
- Stealing assets
- Collusion with external parties

### **Fraud risk can be managed by ensuring:**

- The company has a clear fraud policy and it is communicated to the staff.
- Effective recruitment policy (obtaining references etc).
- Training of staff.
- Good internal controls by ensuring internal audits are carried out, especially where there is cash and goods.
- Segregation of duties.
- Surprise audit visits.

### **Fraud response plan**

- Internal audit to lead the investigation and arrange interviews and gather evidence.
- External auditors to provide support and any evidence.
- Obtain external expertise to investigate fraud if not adequate.
- Finance director has overall responsibility of organising the investigation and may delegate to an individual internal security officer or internal audit.
- Audit committee should review all evidence and details of all fraud investigations.
- Legal advice obtained in relation to internal disciplinary action taken as well as criminal or civil action taken.
- Police are involved if there is any chance of prosecuting the suspects.
- Insurance company to be contacted if a claim of losses is going to be pursued.

### Specific types of fraud

- Advance fee fraud
- Pyramid schemes

### Risk management

<b>Retain the risk</b>	If the risk is small and won't affect the company's profits, the company does very little and lives with it.
<b>Avoid risk</b>	Taking action to ensure all risk is avoided, but this will cost money and may inhibit growth i.e. invoicing overseas clients in sterling only, however some risks maybe unavoidable.
<b>Reduce risk</b>	Ensuring the risk is minimised by training staff and having effective management control systems.
<b>Transfer risk</b>	Insurance and hedging, passes the risk to third party, buy costs money.

### Identifying risks

Organisations should have a system of identify risks and this process should be carried out regularly as risks identified in the previously period may not necessarily be the same for the coming period. This process is not designed to eliminate the risks but to identify them and there significance.

### Quantification of risks

Should we be able to measure and quantify the level of risk objectively then we can decisions which would maximise returns for any given level of risk. We can assign probabilities to each outcome and work out the expected value.

### **Diversification of risk**

The higher the risk the higher the rewards. What level of risk the organisation or investors take depends on their attitude towards risk. Finance theory states that investors are rational and do not take un-necessary risk.

One way of reducing risk of investment is through diversification. Portfolio theory deals with diversification.

### **An example of a risk management framework**

- **Identify risks** ó This is the process of systematically trying to identify risks using various techniques such as brain storming or scenario analysis. A risk committee would be usually set up to address such issues.
- **Risk appetite** ó Ascertain the level of risk that you are willing to accept. This is usually set by the directors of a company and can be expressed both quantitatively (e.g. risk of non-recovery of investment) or qualitatively (e.g. reputation risk). In practice there are different levels of risk for different areas of the organisation.
- **Risk quantification** ó This is the assessment of different decisions that can be taken and the level of risk attached to them. By knowing the quantity of risk we can then measure it against our risk appetite to see whether or not it is acceptable.
- **Control** ó This is where control measures are taken to mitigate the risks identified.
- **Monitor and review** ó Risks affecting the organisation are ever changing and so the risk identification process should be carried out on a regular basis to ensure that the risks identified are still relevant and any new risks should be considered and controlled appropriately.



Chapter

# 13

## Foreign exchange risk

Foreign exchange risk or currency risk is the risk of uncertainty of outcome that arises because exchange rates change.

**Currency risk effects**

Importers

Exporters

Overseas subsidiaries

Transacting in the overseas capital markets

IAS 21 has the following rules for individual company foreign currency transactions.

Translate each transaction at exchange rate on date of transaction, which is the spot rate. At each subsequent year end date the following rules apply to **monetary and non monetary items**:

**1. Monetary assets and liabilities** at the year end date must be **restated** by using the closing rate of exchange at the year end (e.g. trade receivables, trade payables, bank balances and loans).

**2. Non – monetary** items like non current assets, inventory and investments that are measured at historical cost are **not restated** at the year end date and remain at their initial translated value.

**3. Non monetary** items that are measured at fair value are translated using the exchange rate when the fair valuation was done. Exchange differences go to other comprehensive income in the statement of comprehensive income.

**4. Exchange differences** that arise on re-translation of monetary assets and liabilities are taken to the income statement as exchange gains or losses.

## **Types of foreign exchange risk**

### **Transaction risk**

This is the risk of adverse exchange rate movements which occur during the normal trade of a business with overseas suppliers and customers.

### **Translation risk**

This is when the company's foreign currency assets and liabilities have to be translated into home currency for incorporation in the financial statements.

### **Economic risk**

This is a long term risk of foreign exchange rate movements on the value of worth of the organisation. The organisation will be competing in foreign markets and the affects of exchange rates will have an impact on its future profitability and cash flows

Hedging relationships are regulated by IAS 39 financial instruments, recognition and measurement.

IAS 39 allows the investment which is a non monetary asset to be re-translated at the balance sheet date along side the loan which is a monetary item. The exchange differences can then be offset against each other with only the difference going to the income statement. The offset must be in the region of 80% to 125% (i.e. a highly effective hedge).

### **Translation of currency**

This means translating foreign currency balances in the financial statements to home currency for accounting purposes.

### **Conversion of currency**

This means converting foreign currency to home currency (i.e. physical conversion).

### **Spot exchange rate**

This is the rate of exchange now (today's date).

### **Direct quote**

This is amount of domestic currency equal to one foreign currency unit (£0.56 / \$)

### **Indirect quote**

This is amount of foreign currency equal to one domestic unit (\$1.80 / £)

## Forward rate

This is an exchange rate set for currencies to be exchanged at a future date. The exchange rate is set now, but for settlement at an agreed future date. The forward rates are established using the interest and inflation rates of both countries.

Forward rates are adjustments to spot rates

If a forward rate is anticipated to be cheaper  
ó The forward rate will be quoted at a **DISCOUNT**

If forward rate is anticipated to be expensive  
ó The forward rate will be quoted at **PREMIUM**

**Add discounts and subtract premiums from spot rate. (ADDIS)**

## Exchange rate determination

### Interest rates

Forward rates are derived by applying current market interest rates to the spot exchange rate.

### Interest rate parity (International Fisher effect) (unbiased indicators of future exchange rates)

Interest rate parity is based on the hypothesis that interest rate differences offset differences in spot and forward foreign exchange rates.

The theory suggests that a nominal interest rate consists of 2 elements: the return required by the lender and a premium to cover expected inflation. If the real rate of return to lenders is the same in all countries because of free movement of capital and the operation of the law of one price, then any difference in nominal rates will reflect differences in inflation rates between countries. This is known as the International Fisher Effect.

This theory ties up the relationship between interest rates and inflation between countries.

**Interest rate parity = spot rate A/B ×  $\frac{1 + \text{country A interest rate}}{1 + \text{country B interest rate}}$  = forward rate**

International Fisher effect  $\frac{1 + A\% \text{ nominal interest rate}}{1 + B\% \text{ nominal interest rate}} = \frac{1 + A\% \text{ inflation rate}}{1 + B\% \text{ inflation rate}}$

## **Purchasing power parity**

This states that the same goods, wherever they are traded should have the same price (Law of one price). The law of one price states that in a free market with no barriers to trade no transport or transaction costs, the competitive process will ensure that there will only be one price for any given good. If price differences occurred they would be removed by arbitrage (entrepreneurs would buy in the low market and resell in the high market, this would eradicate the price difference).

If this law is applied to international transactions, it suggests that exchange rates will always adjust to ensure that only one price exists between countries where there is relatively free trade.

If inflation rates can be predicted, so can movements in exchange rates.

$$\text{Purchasing power parity} = \text{spot A/B} \times \frac{1 + \text{A inflation rate}}{1 + \text{B inflation rate}} = \text{forward rate}$$

## **Hedging against foreign exchange rate fluctuations**

### **Transaction risk**

This is the risk of adverse exchange rate movements between the date the price is agreed and the date cash is received / paid, arising during normal international trade.

### ***Risk of FC strengthening***

If you are importing goods and have to pay an invoice in foreign currency, you will be hedging against the risk of exchange rates going down, as this will cost you more.

### ***Risk of FC weakening***

If you are exporting goods and will be receiving foreign currency, you will be hedging against the risk of exchange rates going up, as this will give lower receipts.

## **Hedging without the use of money markets (Internal hedging)**

### **(i) Invoicing in own currency**

The company exporting goods and services invoices in their own home currency, thereby passing the currency risk to the customer. This has marketing disadvantages and may not be very competitive.

### **(ii) Matching receipts and payments**

An organisation can ensure that it operates in such a way that it will be receiving and paying in the same foreign currency.

A company importing and exporting will be receiving and paying foreign currency. If it is in the same currency, then the company can use the foreign currency receipts to pay the foreign currency invoices. The only amount left to hedge will be the net amount.

### **(iii) Lead payments**

Payments for the foreign currency invoices are made in advance to take advantage of the favourable exchange rates. The company believes that the exchange rates will be adverse in the future and therefore they take the benefit now. But the major drawback of this is the cash is paid earlier and there may be risk of non delivery.

### **(iv) Lagged payments**

Payments are delayed to the overseas suppliers as the future exchange rates will be more favourable. This may have cash advantages for the company as payment is delayed but it may impact adversely with the supplier relationship.

### **(v) Counter trade / barter**

The companies only deal in goods and not in cash. This will obviously remove transaction risk, but agreeing quantity may be a problem.

### **(vi) Netting & pooling**

This is the process of setting off credit against debit balances so that only the reduced net amounts are paid by currency flows. Netting and pooling is undertaken by large multinational organisations that have subsidiaries in various locations around the world.

## **Hedging with the use of money markets (external hedging)**

1. Forward exchange contract
2. Money market hedge
3. Futures
4. Options
5. Swaps

## **Forward exchange contracts**

### **Features of a forward exchange contract**

- (i) A firm and binding contract between a bank and its customer.
- (ii) It is a contract to purchase or sell currency.
- (iii) The sale or purchase of currency being at a fixed exchange rate set at the point the contract is made.
- (iv) The performance of the contract is at some point in the future which is specified at the point the contract is made.

A forward contract would be undertaken at the point of transaction for performance at the point of cash flow.

### **Advantages of forward contract**

- ✓ The exchange rate is fixed, therefore the outcome is known.
- ✓ Tailor made so exact amount of currencies are hedged.
- ✓ It is good for budgeting purposes.
- ✓ Relatively straight forward to set up and administer.
- ✓ Short maturity dates.

### **Disadvantages of forward contract**

- ✗ It is a binding contract and has to be honoured.
- ✗ If the import or export deal falls through, the company has to exchange currency.
- ✗ Can't take advantage of favourable exchange movements on the spot market.
- ✗ Bank charges.

## **Money market hedge**

The money market hedge involves exchanging currencies immediately and using the interest rates of both countries to hedge against movements in exchange rate. The money market hedge uses the principles of interest rate parity.

Money can be deposited or loaned from the Eurocurrency markets. Eurocurrency is currency which is borrowed or deposited with a bank outside the currency's country of origin. It is mainly used for short term purposes and is a good way to hedge against currency risk.

Money can be deposited or loaned from the Eurocurrency markets. Eurocurrency is currency which is borrowed or deposited with a bank outside the currency's country of origin. It is mainly used for short term purposes and is a good way to hedge against currency risk.

### **Features of a money market hedge**

- (i) Currencies are loaned or deposited on the date of the transactions. (This is effectively the cash flow point at the transaction point).
- (ii) The loans or deposits accrue and earn interest.
- (iii) At the cash flow point, the loan is paid and deposits are taken out.

### **Advantages of money market hedge**

- ✓ Relatively straight forward to set up and administer.
- ✓ Tailor made so exact amount of currencies are hedged.
- ✓ Cash flows are known with certainty which is good for budgeting purposes.
- ✓ Reduces risk of adverse exchange rate movements.

### **Disadvantages of money market hedge**

- ✗ Can't take advantage of favourable exchange rate movements on the spot market.
- ✗ Tied into the currencies just like with forward contract.
- ✗ Bank charges.
- ✗ If the import or export deal falls through, the company has to exchange currency.

### **Foreign currency futures**

Futures contracts are forward contracts traded on a futures and options exchange. There are several futures and options exchanges around the world.

#### **Features of currency futures contracts**

- (i) They are exchange traded and can only be bought and sold through a futures exchange.
- (ii) They are standardised contracts. A futures contract entitles you to buy or sell any thing, i.e. foreign currency, orange juice etc. (i.e. the underlying asset)
- (iii) Futures contracts are available on a 3 monthly cycle (usually March, June, September and December), with 3 different contracts available at any one time e.g. in early Feb you have a choice of March, June, September contracts. Therefore if you bought one £ March contract for \$1.50, you would be buying £25,000 in exchange for (£25,000 x \$1.50) \$37,500, with exchange of currencies being due at the end of March.
- (iv) Futures contracts can be bought or sold in the futures market and the price of the contract is effectively the exchange rate at which the deal is done.

### **Advantages of futures contracts**

- ✓ Transaction costs are lower than forward contracts and money market hedges. This is the reason why they are so marketable.
- ✓ Only closed once the cash flow has occurred on the spot market.
- ✓ Very liquid as they can be closed out any time. Forward contract are tied in until maturity date.
- ✓ Short maturity dates.

### **Disadvantages of futures contracts**

- ✗ Can't make them tailor made as they are standardised in nature.
- ✗ Standardised nature results in hedge under or over efficiency.
- ✗ Complex administration and accounting problems (IAS 39).
- ✗ Basis risk resulting in futures prices being different to spot markets.
- ✗ Must be used only for hedging purposes and not speculation purposes as this will expose the company to more risk.
- ✗ Can't take advantage of favourable exchange rates on the spot market.

### **Currency options**

**Currency option** is a **right but not the obligation** to buy or sell currency at a stated rate of exchange at some time in the future. The company has a choice to either exchange currencies as agreed (exercising the option), or it can simply walk away from the whole arrangement and do nothing as it is better off doing that (option lapsed).

### **Advantages of options**

- ✓ Allow flexibility as they give the choice of being exercised.
- ✓ Very good tool for companies bidding for business abroad. The option can be taken out when bid is made and if the bid is successful exercise the option. This allows the bid price to be accurate as well.
- ✓ Favourable market conditions can be taken advantage of, as option doesn't tie the company into any contract.
- ✓ Short maturity dates

### **Disadvantages of options**

- ✗ Premium costs are very high.
- ✗ Traded options are standardised, therefore over or under hedge efficiency.

**Call** ó is a right but not an obligation to **BUY** a particular currency at fixed rate

**Put** ó is a right but not an obligation to **SELL** a particular currency at fixed rate

### **Currency swaps**

In a currency swap, equivalent amounts of currency are swapped for a period. There are usually 3 stages to a currency swap

1. A principal amount is exchanged at an agreed exchange rate for an agreed period.
2. Interest is paid by agreement between the 2 parties.
3. The principal amounts are swapped back on agreed terms.

### **Advantages of currency swaps**

- ✓ Easy way to gain access to debt in overseas company.
- ✓ Can obtain currency at a favourable rate and good way to hedge against adverse movements.
- ✓ It can be arranged for any size.
- ✓ It will usually be cheaper than borrowing money directly from the overseas market.
- ✓ It can be used to restructure the currency base of the company's liabilities. For example a country trading overseas and receiving revenues in foreign currency, but its borrowings are denominated in the currency of its home country.

### **Disadvantages of currency swaps**

- ✗ Risk of counter party defaults. The company is still liable for its own debts.
- ✗ Other political risks may affect the swap.
- ✗ Bank will charge arrangement fees.

### **Measuring currency exposure**

An organisation should as part of its planning, measure its future exposure to foreign currency. It should do this for both assets and liabilities for its financial statements and also for its foreign currency receipts and payments.

The estimated foreign currency exposure should be done for each separate foreign currency and usually the net amounts are taken for planning purposes. This will ensure that the company has hedging planned in advance to minimise the risk of loss due to movements in exchange rates.

### **Expected value of exchange rates**

Forecast exchange rates and the probability of the values can be used to predict and quantify the currency exposure an organisation may be faced with.



Chapter

# 14

## Interest rate risk

### **Interest rate risk**

Where an organisation has interest bearing assets and liabilities, changes in interest rate will affect their profitability and cash flows. Interest rate risk is the risk of gains or losses arising from changes in the interest rates.

There a number of situation when a company might be exposed to risk from interest rate movements.

### **Fixed v floating rate debt**

Change in interest rates may make type of borrowing chosen the less attractive option.

### **Financial instruments (FI)**

Financial instruments include bonds, loan stock, debentures etc. These are traded on the stock exchange and are a means of raising finance by the organisation. Changes in interest rate will affect the value of these financial instruments.

### **Refinancing risk**

Having to re-pay loan at time when funds not available may mean need for new loan at higher interest rate

### **Methods of reducing interest rate risk**

1. Forward rate agreements (FRA).
2. Interest rate futures.
3. Interest rate options or guarantees.
4. Interest rate swaps.

**EXAM PONT:** Numerical questions will only be set for interest rate swaps and not for FRA, futures or options. Discussion questions will be set for all hedging devices.

### **Forward rate agreement (FRA)**

FRAØ are private agreements normally between a company and a bank about the interest rate on future borrowing or bank deposits. They protect the borrower from adverse market interest rate movements.

An FRA is an agreement between the bank and the company on interest rates relating to the notional principle amount.

FRAØ are cash settled with the gain or losses paid on the day the actual loan or deposit is made. The gain or loss is calculated on the movement in LIBOR (the variable element).

#### **Advantages of FRA**

- ✓ Hedge for short term borrowings and deposits.
- ✓ Tailor made for the company with regards of size of principle, duration and settlement date.
- ✓ Easily accessible and manageable.

#### **Disadvantages of FRA**

- ✗ Can't take advantage of favourable rates.
- ✗ Bank charges.
- ✗ Binding contract and has to be honoured.

### **Interest rate futures**

Just like currency hedging, futures can be used to hedge against interest risk.

**Futures contract** – is a contract relating to currencies, commodities or shares that obliges the buyer (issuer) to purchase (sell) the specified quantity of the item represented in the contract at a pre-determined price at the expiration of the contract.

The terms, amounts and periods are standardised, and are subject to rules concerning margin requirements. Interest rates futures are contracts for a notional principle.

We **BUY** an entitlement to interest receipts. Investor always buys.

We **SELL** a promise to make interest payments. Borrower always sells.

#### **Advantages of interest rate futures**

- ✓ Hedge for short term borrowings and deposits.
- ✓ Easily accessible and manageable.
- ✓ Flexible with regards to closing out and settling.

### **Disadvantages of interest rate futures**

- ✗ Cannot take advantage of favourable rates.
- ✗ Not tailor made for company's needs.
- ✗ Margin requirements.
- ✗ Binding contracts and has to be honoured.

### **Interest rate options**

An interest rate option is an option to borrow or lend a notional amount of principal for a given interest period, starting on or before a date in the future (the expiry date for the option), at a specified rate of interest (the exercise price or strike price for the option). They can either be over the counter or exchange traded.

#### **Over the counter (OTC) Interest rate option**

An OTC interest rate option is an option on a notional amount of principal, and is not an option to take out an actual loan or make an actual deposit. Therefore they are similar to Forward Rate Agreements (FRAs) and interest rate futures.

- (i) If a company needs to hedge borrowing, purchase put options.
- (ii) If a company needs to hedge deposits, purchase call options.

#### **Exchange traded interest rate options**

Interest rate options can be bought and sold on a futures exchange. They are options to buy (call option) or sell (put option) an underlying short-term interest rate future.

#### **Caps, collars and floors (Interest rate options) are all interest rate options**

**Interest rate cap** - This is an option to limit the interest level to a given maximum (sets an interest rate ceiling). The cap would be purchased by a borrower for a premium, and only exercised if interest rate on borrowings rises above the given maximum. The borrower would still take advantage of any interest falls.

**Interest rate floor** - This sets lower limit to interest rates, e.g. a minimum interest rate for an investor.

**Interest rate collar** - This is the simultaneous use of a cap and a floor in order to set a maximum and a minimum price

**Zero-cost collar** is when premium for buying cap equals premium for selling floor.

### **Advantages of interest rate options**

- ✓ Hedge for short term borrowings and deposits.
- ✓ Can take advantage of favourable interest rates as the option is obligatory to exercise.
- ✓ Can use collar to ensure that interest rates stay within limits by writing options as well as buying them.

### **Disadvantages of interest rate options**

- ✗ Premium costs can be very high.
- ✗ Writing options can be dangerously risky if not done properly (Nick Leeson affair).

### **Interest rate swaps**

This is the only method of hedging interest rate risk that will be examinable numerically.

Interest rate swaps are agreements where parties exchange interest commitments.

In simplest form, two parties swap interest with different characteristics. Each party borrows in market in which it has comparative advantage.

- (i) A company, which has debt at a fixed rate of interest, can make a swap so that it ends up paying interest at a variable rate.
- (ii) A company which has debt at a variable rate of interest (floating rate debt) ends up paying a fixed rate.

### **Advantages of interest rate swaps**

- ✓ Allows companies to manage their risk exposure by switching long term interest commitments with switching from variable to fixed and vice versa.
- ✓ Allows cheaper borrowings and access to fixed or variable markets.
- ✓ Terminations of loans can be avoided by switching interest characteristics thereby saving costs.

### **Disadvantages of interest rate swaps**

- ✗ Usually done through the bank which charges.
- ✗ Risk of counter party default. The company is still legally liable for its original interest commitments.
- ✗ Difficult to find the right swap partner (although banks acting as intermediaries help)
- ✗ Difficult to agree to the splitting of the gains, especially for smaller companies who have worse credit ratings.

## **Measuring interest rate risk exposure**

An organisation must assess the following in relation to interest rate risk exposure:

- (i) Amount of interest bearing liabilities and assets.
- (ii) Amount that are fixed rated and variable rated.
- (iii) Maturity of the liabilities and assets.
- (iv) How the loans will be repaid.
- (v) Current interest payments and forecast interest payments.

## **IAS 32 Financial instruments: disclosure and presentation**

This accounting standard states that companies must classify financial instruments as either a financial liability or as equity.

## **IAS 39 Financial instruments: Recognition and measurement**

IAS 39 states that initially ALL financial instruments must be stated at their fair value. This includes financial derivatives

## **Hedging**

Hedging is a management strategy to reduce the risk the company faces

Hedge accounting offsets the profit on one item against the loss of another item, where they are used together. Remember offsetting is not normally allowed.

IAS 39 permits hedge accounting on two conditions.

- a) The hedging relationship must be formally documented and designated. This means that there is a proper strategic policy in place for the hedging.
- b) The hedge must be highly effective. This means that most (between 80% to 125%) of the losses will be recovered by the profits and vice versa.

## **Fair value hedge**

This is where the fair value of the hedged item changes as the market prices change. At the end of the year the items are re-measured to fair value. The changes in the fair value of financial derivative and the hedged item (i.e. variable debt and interest rate future) are offset against each other in the income statement. If the hedge is highly effective it will have little impact on profit as the gain and losses will be roughly equal

### **Cash flow hedges**

This is where the cash flows of the item being hedged change as the market prices change. The change in the fair value of the hedging financial instrument is taken to equity initially, and when the actual transaction occurs, the change is then moved to the income statement.

### **Value at Risk (VaR)**

A technique used to estimate the probability of portfolio losses based on the statistical analysis of historical price trends and volatilities.

VaR is commonly used by banks, security firms and companies that are involved in trading energy and other commodities. VaR is able to measure risk while it happens and is an important consideration when firms make trading or hedging decisions.

VaR answers the question, "how much can I lose with x% probability over a pre-set horizon"