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**Paper  
P5**

**ADVANCED PERFORMANCE  
MANAGEMENT**

**ACCA QUALIFICATION  
COURSE NOTES  
JUNE 2011 EXAMINATIONS**

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# Paper P5


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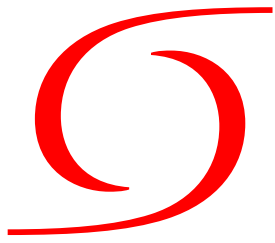
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## Present Value Table

Present value of 1 i.e.  $(1 + r)^{-n}$ 

Where  $r$  = discount rate  
 $n$  = number of periods until payment

Periods (n)	Discount rate (r)										
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	2
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	3
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	4
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	5
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	6
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	7
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	8
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	9
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	10
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	11
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	12
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	13
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	14
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694	2
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579	3
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482	4
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402	5
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335	6
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279	7
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233	8
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194	9
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162	10
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135	11
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112	12
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093	13
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078	14
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065	15

**Annuity Table**

Present value of an annuity of 1 i.e.  $\frac{1 - (1 + r)^{-n}}{r}$

Where  $r$  = discount rate  
 $n$  = number of periods

*Discount rate (r)*

Periods (n)	<i>Discount rate (r)</i>										
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	2
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	3
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	4
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	5
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	6
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	7
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	8
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	9
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	10
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	11
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	12
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103	13
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367	14
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	2
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	3
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	4
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	5
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	6
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	7
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	8
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	9
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	10
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	11
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	12
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	13
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	14
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	15

## Chapter 1

# INTRODUCTION TO PAPER P5

### 1 The aim of the paper

The aim of this paper is to apply relevant knowledge, skills and exercise professional judgement in selecting and applying strategic management techniques in different business contexts and to contribute to the evaluation of the performance of an organisation and its strategic development.

### 2 The syllabus

There are six areas detailed in the syllabus:

- ◆ Strategic planning and control
- ◆ External influences on organisational performance
- ◆ Performance measurement systems and design
- ◆ Strategic performance measurement
- ◆ Performance evaluation and corporate failure
- ◆ Current developments and emerging issues

Each of these areas are dealt with in the following chapters of these Course Notes.

#### 2.1 Paper F5

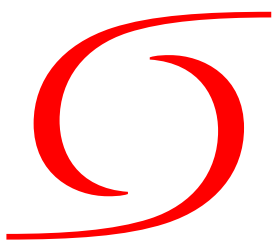
Paper P5 builds on Paper F5 (Performance Management) and you are expected to have a thorough understanding of the Paper F5 syllabus. Although some of the topics from Paper F5 are revised in these notes, it is impossible to revise all of them. If (because of previous syllabus changes) you did not take Paper F5, or if you have forgotten F5, then it is vital that you obtain a set of F5 notes and work through them properly yourself.

#### 2.2 Paper P3

In addition, there is some overlap between Papers P5 and P3 in the area of strategic planning and control. Although this area is revised briefly in these notes you should make sure that you are prepared to demonstrate your P3 knowledge in the Paper P5 exam.

#### 2.3 Finally!

Finally, the new examiner has written an article in the February 2011 edition of Student Accountant explaining his approach to the exam. You can find the article on the ACCA website, and it is strongly recommended that you read this article before (and after!) your studies.



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## Chapter 2

# INTRODUCTION TO STRATEGIC MANAGEMENT ACCOUNTING

## 1 Introduction

This chapter contains a general review of the different levels at which planning, decision making and control take place within an organisation.

Additionally, more detailed consideration is given to the nature and purpose of strategic planning.

## 2 Hierarchy of management

Planning, decision making and control can be classified into three levels:

### 2.1 Strategic planning:

This is the process of developing the long-term ( for example 5 to 10 years) plans for the company

For example:    what new products to launch?

                          what new markets to develop?

This sort of planning, together with the decision making involved, will be done at Board level. It tends to be more outline rather than detailed planning.

### 2.2 Management control / Tactical planning:

This is the more detailed, short-term planning (for example, the one year budgets) in order to ensure resources are obtained and used effectively in order to achieve the long-term plans of the company

For example:    how many staff will the company need next year?

Control will be exercised against budget using, for example, variance analysis.

### 2.3 Operational control:

This is the day-to-day management of the business in order to ensure that specific tasks are carried out effectively and efficiently.

For example:    ensuring that the budgeted production is achieved each day.

The information used will be very detailed and will be quantitative, but will often be expressed in terms of (for example) units or hours instead of purely in monetary terms.



## INTRODUCTION TO STRATEGIC MANAGEMENT ACCOUNTING

Examples of three 'real-life' mission statements are reproduced below:

### *Mission Statement*

The mission of The Walt Disney Company is to be one of the world's leading producers and providers of entertainment and information. Using our portfolio of brands to differentiate our content, services and consumer products, we seek to develop the most creative, innovative and profitable entertainment experiences and related products in the world.

McDonald's vision is to be the world's best quick service restaurant experience. Being the best means providing outstanding quality, service, cleanliness, and value, so that we make every customer in every restaurant smile.

The mission of the Office of the United Nations High Commissioner for Human Rights (OHCHR) is to protect and promote all human rights for all.

The purpose of the Mission Statement is to communicate to stakeholders the nature of the organisation, and to focus strategy. However, in practice they are generally full of meaningless phrases!

### 3.3 Goals and Objectives

Goals and objectives are often put together with no distinction made between them.

However, strictly speaking, **goals** are statements of general intentions, whereas **objectives** are more specific.

An example of a **goal** is: to improve profits

An example of an **objective** is: to achieve a Return on Capital Employed of 25% within two years.

## 3.4 'Good' objectives should be:

**Specific**

**Measurable**

**Agreed (by those responsible for achieving them)**

**Realistic**

**Time-bound**

An example of 'real-life' objectives is printed below:

**Goals:**

We want to be a clear leader in of our markets.

- ◆ Biggest growth in volumes (in absolute terms)
- ◆ Highest profit (in absolute terms)
- ◆ Highest customer satisfaction

We are targeting to be among the top 10 in corporate financing.

**Financial objectives over the next 3 years:**

- ◆ To increase the operating profit before taxes by 15%
- ◆ Return on equity of at least 20%
- ◆ Cost-income ratio below 45%
- ◆ Net credit losses below 0.5%

## INTRODUCTION TO STRATEGIC MANAGEMENT ACCOUNTING

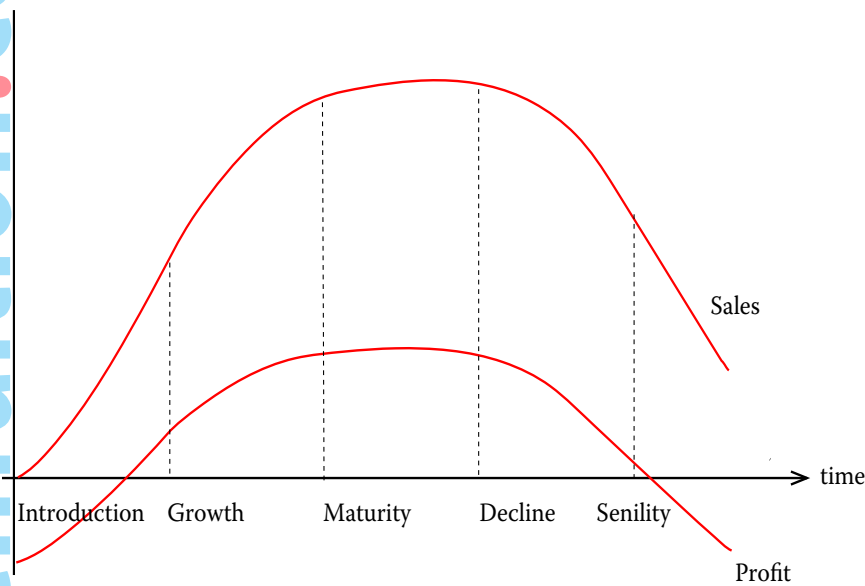
**3.5 Corporate Appraisal**

**Corporate appraisal** is a critical assessment of the strengths and weaknesses, opportunities and threats in relation to the internal and external (environmental) factors affecting an organisation. The purpose is to establish the condition of the organisation prior to preparing a long-term, strategic plan.

A **Position Audit** assesses the strengths and weaknesses of the company, asking 'what are we good at?' and 'what are we bad at?'

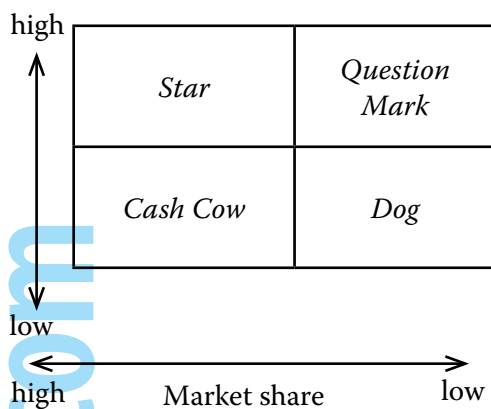
In particular, existing products will all be reviewed and consideration given as to which products should be continued and promoted, and which products should perhaps be phased out or abandoned.

One thing which should be considered in relation to each product is as to where it is positioned currently on its '**product life cycle**'.



If a product is currently in the Maturity or Decline phase, the the company needs to develop strategies for replacement of the product in the long term, rather than rely on its continuing profitability.

A potentially useful approach to considering each existing product is to position them on a **Boston Matrix** (or Boston Grid).



Having positioned the products on the grid, it can then be used to consider future strategies for each of them.

An **Environmental Analysis** identifies the opportunities and threats presented by the external environment.

These can be considered under four separate headings (**PEST analysis**):

**Political**

**Social**

**Economic**

**Technology**

## INTRODUCTION TO STRATEGIC MANAGEMENT ACCOUNTING

Additionally (especially when launching a new product) consideration may be given to **Porter's Five Forces**:

**Threat of new entrants**

**Threat of substitutes**

**Bargaining power of buyers**

**Bargaining power of suppliers**

**Rivalry between existing competitors**



**Ansoff's product-market matrix**

Ansoff's matrix is commonly used by businesses that have growth as their main objective, and is used to focus managements attention on the four main alternative strategic options available for growth.

	Existing products	New products
Existing markets	Market penetration	Product development
New markets	Market development	Diversification

Having carried out a Position Audit and an Environmental Analysis, the task is then to develop strategies in order to:

- ◆ convert weaknesses into strengths
- ◆ convert threats into opportunities
- ◆ match strengths with opportunities

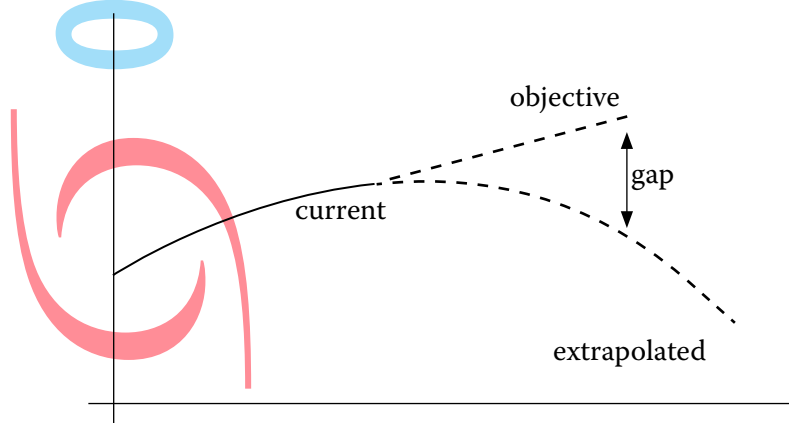
This exercise is commonly undertaken with the use of SWOT analysis.

Internal to company

<i>Strengths</i>	<i>Weaknesses</i>
<i>Opportunities</i>	<i>Threats</i>

External to company

A SWOT analysis helps in identifying suitable strategies. To assist in identifying sufficient strategies, a gap analysis is often prepared.



The types of strategy that may be considered in order to fill the gap are:

- ◆ cost savings / greater efficiency
- ◆ changes to the product / market mix (organic or by acquisition)
- ◆ withdrawal



## 4 Strategic Choice

Having carried out a corporate appraisal and having identified potential strategies, it is then necessary to appraise them and formulate a strategic plan. The types of techniques that may be employed in appraising the strategies are discussed in the chapter on decision making.

## 5 Strategy Implementation

The strategic plan will generally be formulated at Board level. Once it has been prepared, it will normally be the managers of the company who will be expected to implement it. This then becomes the second tier of decision making identified at the start of this chapter – Management control / Tactical planning.

## 6 Freewheeling Opportunism

It is possible to do without strategic plans and operate a system whereby opportunities are exploited as they arise. This is known as freewheeling opportunism.

The main possible advantage of this approach is that opportunities can be seized as they arise, whereas a rigid planning framework might impose restrictions so that opportunities are lost.

There are however disadvantages:

It cannot guarantee that all opportunities are identified and appraised.

It emphasises the profit motive to the exclusion of other considerations.

## 7 Multinational companies

A multinational company is one which undertakes a substantial proportion of its business in countries other than the one in which it is based.

The strategic process in these companies must take account of certain special features, and you must be able to briefly describe these for the examination.

- ◆ **Process specialisation**

e.g. place labour intensive operations in countries with low wage rates

- ◆ **Product specialisation**

e.g. consumers in different countries have different requirements and 'tastes'

- ◆ **International trade issues**

e.g. the economics of a business may be particularly sensitive to exchange rate fluctuations

- ◆ **Political sensitivities**

e.g. particular countries may have particular political risks

- ◆ **Administrative issues**

e.g. the transfer of profits may result in tax being payable twice

## 8 Benchmarking

Benchmarking is the comparing of a firm's performance with that of industry best practices, with the intention of improving performance.

### 8.1 The typical stages involved are:

- ◆ the identification of problem areas
- ◆ the identification of other industries with similar processes, and from them the industry leaders
- ◆ the detailed surveying of the other company's business practices
- ◆ the implementation of new, improved business practices
- ◆ the monitoring of improvements

### 8.2 Types of benchmarking include:

Functional benchmarking: comparing specific functions with the same functions in other companies (which do not have to be in the same industry)

Product benchmarking: comparing specific products with those produced by competitors (sometimes involving reverse engineering)

Financial benchmarking: comparing financial performance with that of competitors

Strategic benchmarking: comparing with how other companies compete (not usually industry specific)

## Chapter 3

 Free lecture available for this chapter, [click here](#)

# PERFORMANCE MANAGEMENT AND CONTROL OF THE ORGANISATION

## 1 Introduction

This chapter looks at budgeting used as a method of control within an organisation.

You will already have been examined on budgeting in previous examinations, and much of this chapter is therefore revision.

In this examination, questions are more likely to focus on written aspects, and the syllabus includes budgeting in not-for-profit organisations; modern developments; and behavioural aspects.

## 2 Benefits of budgeting

Planning

Co-ordination

Control

Authorising and delegating

Evaluation of performance

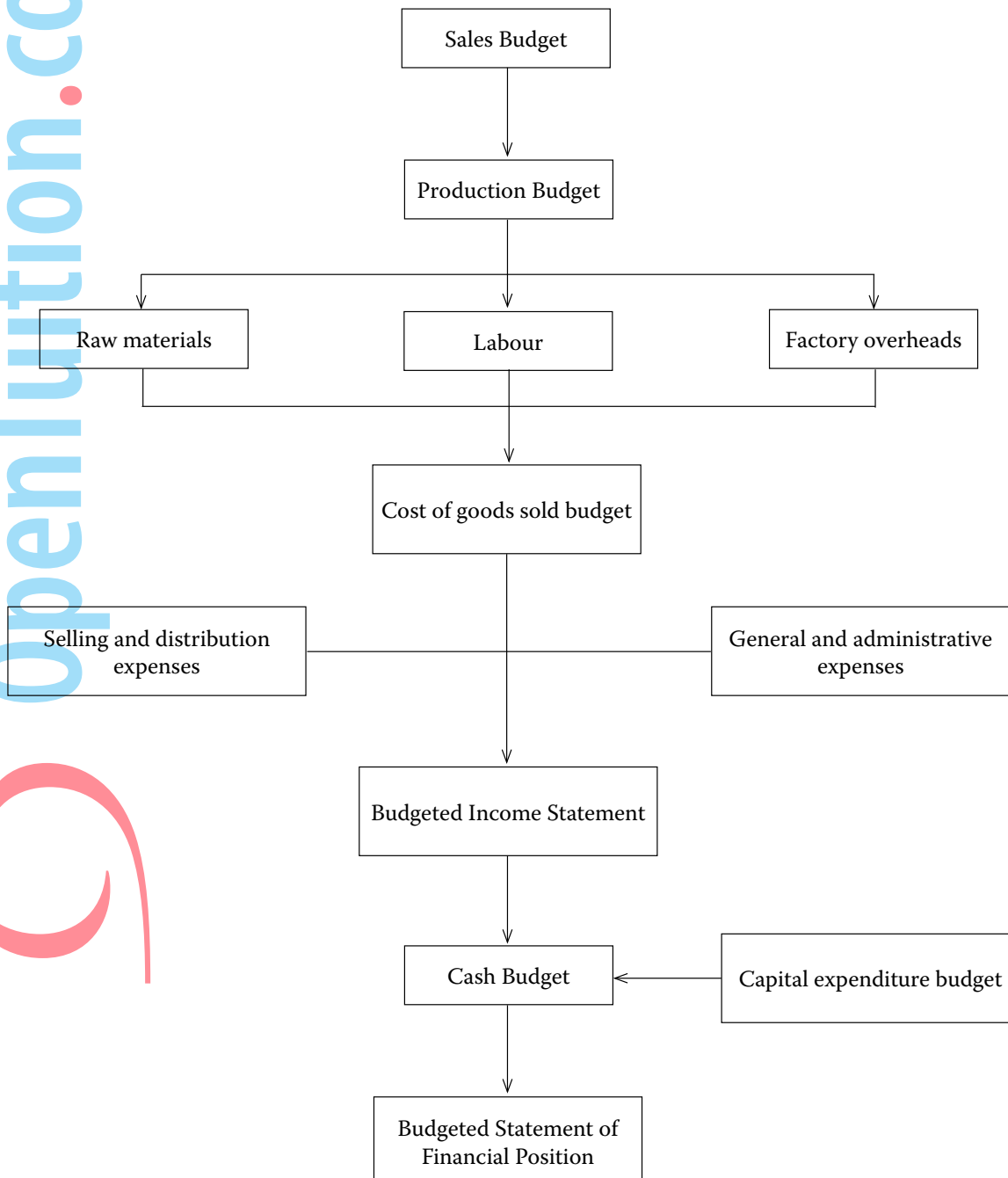
Communicating and motivating

### 3 Principal budget factor

The principal budget factor is the factor that limits the activity for the budget period. Normally this is the level of sales and therefore the sales budget is usually the first budget to be prepared – this then leads to the others.

However, it could be (for example) a limit on the availability of raw materials that limits activity. In this case raw materials would be the principal budget factor, and this would be the first budget to be prepared.

### 4 The preparation of budgets



## 5 Types of budget

### 5.1 Fixed budget

This is a budget prepared at the anticipated level of activity.

If the expected level of activity changes during the period, then the fixed budget becomes unrealistic and will usually be flexed (see below) for use as control.

However, the original fixed budget still very often remains as an overall target – for instance, the profit from the fixed budget will often have been given to head office and used as the target for the period.

### 5.2 Flexed budget

A flexed budget is when the budget is revised (or flexed) to reflect the actual level of activity.

This budget is useful particularly for control purposes and is what we use in our variance analysis.

### 5.3 Rolling budget

A rolling budget is one that is kept continually up-to-date by revising at the end of each month and also adding a further month.

For example, on 1 January 2008 prepare a budget for the year to 31 December 2008.

At the end of January 2008, revise the budget for the remaining 11 months of 2008 (in the light of what happened in January), and also prepare a budget for January 2009.

In this way there is always a budget for the coming 12 month period.

The benefits of rolling budgets are that they are likely to be more accurate, and also the work-load of budgeting is spread throughout the year and becomes part of the normal job – again leading to more accurate budgeting.

**Example 1**

A company has prepared the following fixed budget for the coming year.

Sales	10,000 units
Production	10,000 units

	\$
Direct materials	50,000
Direct labour	25,000
Variable overheads	12,500
Fixed overheads	10,000
	\$97,500

Budgeted selling price \$10 per unit.

At the end of the year, the following costs had been incurred for the actual production of 12,000 units.

	\$
Direct materials	60,000
Direct labour	28,500
Variable overheads	15,000
Fixed overheads	11,000
	\$114,500

The actual sales were 12,000 units for \$122,000

- (a) Prepare a flexed budget for the actual activity for the year
- (b) Calculate the variances between actual and flexed budget, and summarise in a form suitable for management.

(Use a marginal costing approach)

## 6 Methods of budgeting

### 6.1 Incremental budgeting

This approach is to take the previous years results and then to adjust them by an amount to cover inflation and any other known changes.

It is the most common approach, is a reasonably quick approach, and for stable companies it tends to be fairly accurate.

However, one large potential problem is that it can encourage the continuation of previous problems and inefficiencies.

The reason for this is that the budget is a plan for the coming year – not simply a financial forecast.

If we require a wages budget, we will probably ask the wages department to produce it and they (using an incremental approach) will assume that our workers will continue to operate as before. They will therefore simply adjust by any expected wage increases.

As a result, the 'plan' for our workers stays the same as before. Nobody has been encouraged to consider different ways of operating that may be more efficient. It is at budget time that we perhaps should be considering different ways of operating.

### 6.2 Zero-based budgeting

With zero-based budgeting we do not consider the previous period. Instead, we consider each activity on its own merits and draw up the costs and benefits of the different ways of performing it (and indeed whether or not the activity should continue).

We then decide on the most effective way of performing each activity.

Clearly any changes to the way an activity is performed may require funding, and there may not be sufficient funding available for all changes proposed, and therefore they are ranked to decide which changes are made.

Although this approach is in principle a much better approach to budgeting, it is time-consuming and also requires much more expertise than incremental budgeting. For this reason, it is often restricted just to a few activities each year in order that training and help may be given to the people involved. Other activities are budgeted using the incremental approach.

### 6.3 Activity Based budgeting

This is the application of the idea of Activity Based Costing to the process of budgeting, and as such has particular relevance to budgeting for fixed overheads.

At the planning stage, attempts are made to identify which activities drive various overheads. Costs are spread over these cost drivers using whatever basis appears to be appropriate in the circumstances.

## 7 Behavioural aspects

### 7.1 Participation

If the budget process is not handled properly, it can easily cause dysfunctional activity. It is therefore necessary to give thought to the behavioural aspects.

- ◆ **Top-down budgeting**

This is where budgets are imposed by top management without the participation of the people who will actually be involved in implementing it.

- ◆ **Bottom-up budgeting**

Here the budget-holders do participate in the setting of their own budgets.

- ◆ **Advantages and disadvantages**

### 7.2 Target setting and motivation

Targets can assist motivation and appraisal if they are set at the right level.

- ◆ if they are too difficult then they will demotivate
- ◆ if they are too easy then managers are less likely to strive for optimal performance
- ◆ ideally they should be slightly above the anticipated performance level



## PERFORMANCE MANAGEMENT AND CONTROL OF THE ORGANISATION

Good targets should be:

- ◆ agreed in advance
- ◆ dependant on factors controllable by the individual
- ◆ measurable
- ◆ linked to appropriate rewards and penalties
- ◆ chosen carefully to ensure goal congruence

### 7.3 Responsibility accounting

A system of accounting that separates revenues and costs into areas of separate responsibility, which can then be assigned to specific managers

### 7.4 Management by objectives

A system of management incorporating clearly established objectives at every level of the organisation.

Here there is less emphasis on monetary budgets and more emphasis on taking action which helps the business to achieve its objectives.

## 8 Budgeting In Not-For-Profit Organisations

Issues that tend to arise in budgeting that are specific to not-for-profit organizations include the following:

- ◆ the organisation may be prevented from borrowing funds or from budgeting for a deficit
- ◆ the organisation may not be allowed to transfer funds from one budget head to another
- ◆ the budgeting tends to be just for one financial year (i.e. short-term rather than long-term) incremental budgeting is the method most widely used

## 9 Beyond Budgeting

There has been much recent criticism of the annual budgeting process for many reasons, including the following:

- ◆ it takes up a lot of management time
- ◆ however well the budget is prepared, it rapidly becomes out of date and therefore of less use
- ◆ it provides a framework for managers to work to and they are therefore less keen to consider innovations (that may mean overspending the budget in the short-term even if good for the long-term).

Several companies are adopting a 'beyond budgeting' approach whereby instead of preparing budgets and measuring the performance of managers by reference to the budget, managers are measured by comparison with other similar companies or by comparison with other similar divisions of the same company.

"The annual budgeting process is a trap. Pressured by fixed targets and performance incentives, managers focus on making the numbers instead of making a difference, meeting set goals instead of maximizing potential. With their compensation at stake, managers often resort to deceitful-even unethical-behavior. In the end, everybody loses-the employee, the company, and ultimately the customer. The Beyond Budgeting model argues that companies must abandon traditional budgeting in favor of a new model that links performance measurement to evolving competitive benchmarks-and shifts the firm's focus from controlling employee behavior to delivering customer value."

## Chapter 4

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# LEARNING CURVES

## 1 Introduction

You have been examined on learning curves previously. Although they are a little less likely in this examination, they are still relevant and this chapter is included as revision – there is nothing new to learn.

## 2 Learning

In most budgeting techniques we assume that the total variable cost is reasonably linear – that the variable cost per unit is fixed.

In the case of labour, this is very often not the case in the early stages of a new product. If we were intending to start production of a new product, then the obvious thing to do would be to produce a prototype in order to assess how long it would take to produce each unit. However, this would be dangerous because as we were to produce more and more units it is likely that the time taken for each unit would reduce as the workers gained experience. This reduction in time per unit is known as the learning effect.

### 2.1 Conditions

The theory of learning curves will only hold if the following conditions apply:

- (a) There is a significant manual element in the task being considered.
- (b) The task must be repetitive.
- (c) Production must be at an early stage so that there is room for improvement.
- (d) There must be consistency in the workforce.
- (e) There must not be extensive breaks in production, or workers will 'forget' the skill.
- (f) Workforce is motivated.

### 2.2 Theory

As cumulative output doubles, the cumulative average time per unit falls to a given percentage of the previous average time per unit.

**Example 1**

The time taken to produce the first unit is 100 hours.

There is a learning rate of 75%.

**How long will it take to produce an additional 7 units?**

Lined area for working out the solution to Example 1.

**2.3 Steady State**

Eventually, the time per unit will reach a steady state where no further improvement can be made.

**2.4 Cessation of learning effect**

Practical reasons for the learning effect to cease are:

- (a) When machine efficiency restricts any further improvement
- (b) The workforce reach their physical limits
- (c) If there is a 'go-slow' agreement among the workforce

**2.5 Formula**

$$y = ax^b$$

where  $y$  = cumulative average time per unit  
 $x$  = cumulative output  
 $a$  = time taken for 1st

$b$  = a learning factor which is given by the formula  $\frac{\log r}{\log 2}$

$r$  = learning rate expressed as a %.

**Example 2**

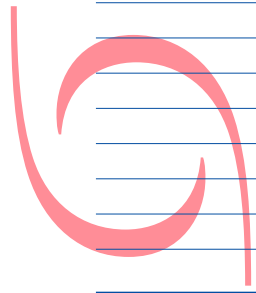
Flogel Ltd has just produced the first full batch of a new product taking 200 hours.

Flogel has a learning curve effect of 85%.

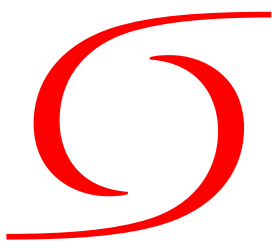
- (a) How long will it take to produce the next 15 batches?
- (b) Flogel expects that after the 30th batch has been produced, the learning effect will cease.

From the 31st batch onwards, each batch will take the same time as the 30th batch. What time per batch should be budgeted?

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A series of horizontal blue lines for writing the answer to the question.



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## Chapter 5

# CHANGES IN BUSINESS STRUCTURE AND MANAGEMENT ACCOUNTING

## 1 Introduction

This chapter looks at the different types of business structure, and the effect the structure has on the information needed.

## 2 The information needs of different business structures

### 2.1 Functional structure

One of the common structures found in medium-sized organisations is the functional structure. This means that people within an organisation are organised by function. So, for example, there is a finance department, a manufacturing department, a sales department, and so on.

**The advantages of such a structure are:**

- ◆ the organisation gains economies of scale
- ◆ each of these department is likely to be large enough to be headed by a well-qualified manager
- ◆ staff within each department are dealing with like-minded individuals with similar skills and motivation.

**The disadvantages of such a structure are:**

- ◆ as the organisation grows, each of the functional departments can become very powerful and can begin to concentrate on their own interests rather than those of the organisation as a whole.
- ◆ staff do not have an understanding of the whole organisation.
- ◆ it is not easy to identify where profits and losses are made

**Information needs of functional structures:**

Because top management in functional organisations is centralised, data from each department needs to be aggregated before top management can review and give feedback on it.

## CHANGES IN BUSINESS STRUCTURE AND MANAGEMENT ACCOUNTING

**2.2 Divisional structure**

As organisations grow they will often develop a divisional structure, where each division has its own functional departments and where the divisional manager has a degree of autonomy.

**The advantages of such a structure are:**

- ◆ divisional managers are more motivated
- ◆ decisions are made 'closer to the action'
- ◆ junior managers have more responsibility and get training for more senior positions in the future

**The disadvantages of such a structure are:**

- ◆ head office management may need to restrict the autonomy of divisional managers, which can reduce motivation and cause dissatisfaction
- ◆ divisional managers are concerned about their own divisions performance rather than that of the organisation as a whole, which can lead to a loss of goal congruence

**Information needs of divisional structures:**

Each divisional manager needs information about the performance of his division – aggregating the data from each department within the division. This aggregated information is then passed upwards to head office.

Head office does however need to aggregate the information received from each division in order to assess the overall performance of the organisation.

**2.3 Network (or matrix) structure**

An example of this may be found in firms of accountants, where there may be managers responsible for each individual office within a country, but at the same time there may be managers responsible for different activities in all offices throughout the country.

As a result, an employee working in the tax department of an office in one town will be reporting both to the manager of that office, and to the nationwide tax manager.

**The advantages of such a structure are:**

- ◆ communication is encouraged between various departments and activities
- ◆ employees are encouraged to be more concerned for the organisation as a whole instead of simply their geographical division

**The disadvantages of such a structure are:**

- ◆ there can be conflicting pressures brought to bear on employees by the different managers to whom they report

**Information needs of network structures:**

Data needs to be aggregated in two ways – both for the manager of the division and for the manager of the activity.

As with a divisional structure, the aggregated information is passed upwards to head office, and head office need to be able to aggregate it in order to assess the performance of the organisation as a whole.



## CHANGES IN BUSINESS STRUCTURE AND MANAGEMENT ACCOUNTING

**2.4 Business Process Reengineering**

Business process reengineering involves re-thinking and radically re-designing of the way an organisations processes operate.

It is not simply attempting to improve the existing way of doing things, but starting almost with a blank piece of paper and designing how best to operate the business.

The starting point is to determine what the desired outcome is of the organisation and then to design how best to achieve it.

It focuses on maximising customer value and removing non-value adding work.

A leading advocate of business process reengineering – Michael Hammer – claimed that most of the work being done does not add any value for customers, and that this work should be removed, rather than simply speeded up, using technology. Information technology in particular has been used primarily for automating existing processes whereas it should be used as a way of making non-value added work obsolete.



## Chapter 6

# EFFECT OF INFORMATION TECHNOLOGY ON STRATEGIC MANAGEMENT ACCOUNTING

### 1 Introduction

This chapter considers the impact of IT on management accounting. There is a lot of terminology, which may or may not be already familiar to you. You are unlikely to be tested on specific terminology, but you should be aware of the various items listed in this chapter.

### 2 Information needs of traditional manufacturing businesses

Manufacturing businesses need information covering four broad areas:

- costs
- quality
- time
- innovation

### 3 Characteristics of service oriented businesses

- ◆ perishability

- ◆ intangibility

- ◆ simultaneity

- ◆ heterogeneity

- ◆ no transfer of ownership

### 4 Information needs of service oriented businesses

Service businesses need very much the same information as manufacturing businesses, but the information required is likely to be much more biased towards qualitative information.

Additionally, the information required is affected by whether it is:

a mass service

the same service delivered to many people – e.g. air travel

a personalised service

the service differs for each customer – e.g. a dentist

## 5 Instant access to data

IT has made it possible to access management data instantly.

You should be aware of the following terminology:

- ◆ databases
- ◆ data warehouse
- ◆ data mining
- ◆ groupware
- ◆ intranets
- ◆ extranets
- ◆ ERP (enterprise resource planning)
- ◆ MIS
- ◆ DSS
- ◆ EIS
- ◆ ES

## 6 Remote input of data

Traditionally, data was input into the computer systems using a keyboard. This takes time, and inevitably results in input errors.

IT has enabled more and more data to be input remotely and/or automatically.

You should be aware of the uses of the following:

- ◆ laptop / notebook computers
- ◆ handheld devices (including smartphones and iPads)
- ◆ barcodes
- ◆ RFID

## 7 The need for continual development

However well a management accounting system has been designed, it is vitally important that it is continually re-appraised, refined and developed if a business is to maintain or improve its performance.

The marketplace is increasingly competitive and increasingly global, creating different information needs for management.

## Chapter 7

# EXTERNAL INFLUENCES ON ORGANISATIONAL PERFORMANCE

## 1 Introduction

Changing business environment

The business environment has been changing rapidly in recent years due to factors such as:

- ◆ increased competition
- ◆ globalisation
- ◆ privatisation
- ◆ changes in customer requirements
- ◆ new approaches to manufacturing  
e.g. just-in-time; dedicated cells

## 2 The limitations of traditional management accounting techniques

You have studied traditional management accounting techniques, such as variance analysis, for earlier examinations. It has however been argued that in today's environment they are less than adequate. Listed below are some examples of areas where traditional management accounting is criticised.

- ◆ **absorption of overheads**

traditional product costing tends to be absorption costing, absorbing the overheads on a labour hour basis. In a modern environment an activity based approach is more appropriate.

- ◆ **process costing**

the traditional approach to cost accounting in a manufacturing business involves accounting for costs process by process as raw materials are transformed into finished goods.


In the modern environment with just-in-time systems there is very little work-in-progress and the conventional process costing approach involves a great deal of work but gains little. A backflush costing approach would be more appropriate.

- ◆ **designing costs out of production**

the focus of traditional management accounting tends to be on reducing costs at the production stage, whereas most costs tend to be determined at the design stage.

- ◆ **focussing on production costs**

many costs are driven by customers (such as delivery costs and discounts), but traditional management accounting tends to focus on production costs. It may not therefore be realised

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that the company is trading with some customers at a loss. A customer profitability analysis approach would be more appropriate.

- ◆ **variance analysis**

traditional variance analysis tends to focus on direct costs rather than on overheads, whereas in most businesses overheads are more controllable than direct costs.

### 3 Customer Profitability Analysis (CPA)

CPA is an application of Activity Based Costing techniques to customers.

Traditionally, ABC is applied to products but in a modern business environment in which it is vital that organisations respond promptly to the demands of customers, analysis on the basis of customers can provide vital management information.

The approach is exactly the same as the 'normal' activity based approach, except that we attempt to identify the profitability of each type of customer.

We can then identify unprofitable types of customer and attempt to persuade them to alter their buying behaviour so they become profitable customers.

This approach also identifies where we should focus our cost reduction efforts.

#### Example 1

Vilnius Ltd manufactures components for the heavy goods vehicle industry. The following annual information regarding three of its key customers is available.

	X	Y	Z
Gross margin	\$897,000	\$1,070,000	\$1,056,000
General head office administration costs (allocated on the basis of sales revenue)	\$35,000	\$67,000	\$56,000
Units sold	4,600	5,800	3,800
Orders placed	300	320	480
Sales visits	80	50	100
Invoices raised	310	390	1,050

The company uses an activity based costing system and the analysis of customer-related costs is as follows.

Sales visits	\$420 per visit
Order processing	\$190 per order placed
Despatch costs	\$350 per order placed
Billing and collections	\$97 per invoice raised

**Using customer profitability analysis, how would the customers be ranked?**

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3.1 Customer profitability statement

There is no set format for the statement, but it would normally be similar to the one below.

	<i>\$'000</i>	<i>\$'000</i>
Revenue at list prices		100
Less: discounts given		<u>8</u>
Net revenue		92
Less: cost of goods sold		<u>50</u>
Gross margin		42
Less: customer specific costs	28	
financing costs:		
credit period	3	
customer specific inventory	<u>2</u>	
		<u>33</u>
Net margin from customer		<u>9</u>

Example 2

Frodo Ltd supplies shoes to Sam Ltd and Gollum Ltd. Each pair of shoes has a list price of \$50 and costs Frodo Ltd \$25. As Gollum buys in bulk it receives a 10% trade discount for every order for 100 pairs of shoes or more. Sam receives a 15% discount irrespective of order size, because that company collects the shoes, thereby saving Frodo Ltd any distribution costs. The cost of administering each order is \$50 and the distribution cost is \$1,000 per order. Sam makes 10 orders in the year, totalling 420 pairs of shoes, and Gollum places 5 orders of 100 pairs each.

Which customer is the most profitable for Frodo Ltd?

## 4 • Activity-Based Management

Activity-based management (ABM) is a method of identifying and evaluating activities that a business performs using activity-based costing to carry out a value chain analysis or a re-engineering initiative to improve strategic and operational decisions in an organization. Activity-based costing establishes relationships between overhead costs and activities so that overhead costs can be more precisely allocated to products, services, or customer segments. Activity-based management focuses on managing activities to reduce costs and improve customer value.

Operational ABM is about “doing things right”, using ABC information to improve efficiency. Those activities which add value to the product can be identified and improved. Activities that don't add value are the ones that need to be reduced to cut costs without reducing product value.

Strategic ABM is about “doing the right things”, using ABC information to decide which products to develop and which activities to use. This can also be used for customer profitability analysis, identifying which customers are the most profitable and focusing on them more.

## 5 • Value analysis

Value analysis is the examination of the factors affecting the cost of a product or service in order to attempt to reduce costs whilst still delivering the required standard of quality and reliability.

The main differentiation is between value added and non-value added activities.

A **value added activity** is one which adds value to the customer's perception of a product or service, whereas a **non-value added activity** is one that does not add value in the eyes of the customer.

Costs that do not add value to the product should be targeted for elimination. However, this is not always the case – the removal of some non-value added activities (such as quality control) could add further costs.

A further classification is the breakdown of activities between **core** (such as time spent with potential customers), **support** (such as travelling time to customers), and **discretionary** (such as correcting accounting errors).

Effective cost management is about reducing or eliminating costs spent on non-core activities.

## EXTERNAL INFLUENCES ON ORGANISATIONAL PERFORMANCE

## 6 Dedicated cells

Many production lines involve many separate processes – for example, cutting, painting, drilling.

The traditional approach is often to have teams of people for each separate process. The material is cut in one process by one team of people, then moves to the next process where it is painted by another team of people, and so on.

This 'production line' approach does mean that each team becomes very skilled at their particular task, which can lead to efficiency savings.

However, a downside of this approach is that employees lose motivation and lose concern for quality, because they do not feel any responsibility for the final product (and in fact often will not even see the finished product).

A potential remedy for this is the 'dedicated cell' approach. Here the workforce is split into small teams comprising workers skilled at each of the various functions. For example one team might comprise one cutter, one painter, and one driller.

- Each team is therefore responsible for all aspects of the production up to the finished product. Each member of the team feels more responsibility to other members of their team, and for the overall quality of the finished product.

## 7 Contingency Theory

The contingency approach to management accounting is based on the idea that there is no universally appropriate accounting system applicable to all organisations in all circumstances. Efficient systems depend on the awareness of the system designer of the specific environmental factors which influence their creation.

The following is a very simplified illustration of the idea:

Petras makes three different products: X, Y and Z. He has never had any competitors, and every month the managing director receives a report in the following form:

Sales	10,000
Production costs	<u>5,000</u>
Gross profit	5,000
Administrative costs	<u>1,000</u>
Net profit	<u>4,000</u>

Another company, Quixas, has entered the market for products X and Y, undercutting the prices charged by Petras, and has started to win some of Petras's customers.

The managing director asks the management accountant for information about the profitability of X and Y. Sales information is easy to analyse, but to analyse cost information requires a new system of coding to be introduced. Eventually the management accountant comes up with the following report:

	X	Y	Z	Total
Sales	3,000	3,000	4,000	10,000
Production costs	<u>500</u>	<u>500</u>	<u>4,000</u>	<u>5,000</u>
Gross profit	2,500	2,500	–	5,000
Administrative costs				<u>1,000</u>
Net profit				<u>4,000</u>

As a result of receiving this information, the managing director reduces the prices of X and Y, and also divides the production function into two divisions, one of which will concentrate exclusively on reducing the costs of product Z while maintaining quality.

This is a simple illustration of contingency theory in that the original design of the accounting system was determined by the fact that Petras faced a highly predictable environment, and was a

highly centralised organisation.

The design of the new system is the result of a new set of **contingent variables** – the entry of Quixas into two of Petras's markets requires the system to adopt a different reporting structure for X and Y, and more detailed analysis of costs in the case of Z. This is matched by a change in the structure of the organisation as a whole.

To recap, the aim of contingency theory is to identify specific features of an organisation's context that affect the design of particular features of that organisation's accounting system.

## 8 Business Process Reengineering

Business process reengineering (BPR) is a management approach aiming at improvements by means of increasing the efficiency and effectiveness of the processes that exist within and across organisations. Organisations need to take a fresh look at their business processes and determine how they can best construct these processes to improve how they conduct business.

Most of the work being done does not add any value for customers, and this work should be removed, not accelerated through automation. Instead, companies should reconsider their processes in order to maximize customer value, while minimizing the consumption of resources required for delivering their product or service.

## Chapter 8

 Free lecture available for this chapter, [click here](#)

# RISK AND UNCERTAINTY

## 1 Introduction

Risk and uncertainty is a topic on which you have been examined previously, but is deemed knowledge and it therefore repeated here as revision.

Decision making involves making decisions now which will affect future outcomes which are unlikely to be known with certainty.

Risk exists where a decision maker has knowledge that several possible outcomes are possible – usually due to past experience. This past experience enables the decision maker to estimate the probability or the likely occurrence of each potential future outcome.

Uncertainty exists where the future is unknown and where the decision maker has no past experience on which to base predictions.

Whatever the reasons for the uncertainty, the fact that it exists means that there is no 'rule' as to how to make decisions. For the examination you are expected to be aware of, and to apply, several different approaches that might be useful.

## 2 Risk preference

As will be illustrated by an example, the approach taken to make the decision will depend on the decision-makers attitude to risk.

A risk seeker will be interested in the best possible outcome, no matter how small the change that they may occur.

Someone who is risk neutral will be concerned with the most likely or 'average' outcome.

A risk avoider makes decisions on the basis of the worst possible outcomes that may occur.



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### **3 The limitations of expected values.**

Although we say that someone who is risk neutral would take an expected value approach to decision making, there are two serious limitations of this approach:



## Chapter 9

# SOURCES OF MANAGEMENT INFORMATION

### 1 Introduction

This chapter considers the information needs of an organisation, particularly in respect of control systems to ensure that the organisation maintains performance.

### 2 Information needs for different levels of decision making

The different levels of decision making were discussed in the previous chapter. The information needs of the decision makers will be different and depend on the type of decision.

#### 2.1 Strategic planning

The information needed at this level is likely to be more external information and is likely to be more forecasts of the future.

#### 2.2 Management control / Tactical planning

At this level there will be a need for both external and internal information. The focus is also more likely to be on current information.

#### 2.3 Operational control

Here the information needs will almost exclusively be internal, and will be past and current information.

## SOURCES OF MANAGEMENT INFORMATION

**3 Sources of information****3.1 Internal sources of information**

<i>Source</i>	<i>Information</i>
Sales ledger system	Number and value of invoices Volume of sales Value of sales, analysed by customer Value of sales, analysed by product
Purchase ledger system	Number and value of invoices Value of purchases, analysed by supplier
Payroll system	Number of employees Hours worked Output achieved Wages earned Tax deducted
Fixed asset system	Date of purchase Initial cost Location Depreciation method and rate Service history Production capacity

In addition the following internal, non-accounting sources may be used

<i>Source</i>	<i>Information</i>
Production	Machine breakdown times Output achieved Number of rejected units
Sales and marketing	Types of customer Market research results Demand patterns, seasonal variations etc

## SOURCES OF MANAGEMENT INFORMATION

## 3.2 External courses of information

There is much information to be obtained from external sources as illustrated below:

<i>Source</i>	<i>Information</i>
Suppliers	Product prices Product specifications
Newspapers, journals	Share price Information on competitors Technological developments National and Market surveys
Government	Industry statistics Taxation policy Inflation rates Demographic statistics Forecasts for economic growth
Customers	Product requirements Price sensitivity
Employees	Wage demands Working conditions
Banks	Information on potential customers Information on national markets
Business enquiry agents	Information on competitors Information on customers
Internet	Almost everything via databases (public and private), discussion groups and mailing lists.

## SOURCES OF MANAGEMENT INFORMATION

## 4 Attributes of good information

In order to be useful to management, information should possess the following attributes:

- ◆ it should be relevant for its purpose
- ◆ it should be complete for its purpose
- ◆ it should be sufficiently accurate for its purpose
- ◆ it should be clear to the manager using it
- ◆ the manager should have confidence in it
- ◆ it should be communicated to the appropriate manager
- ◆ it should not be excessive – its volume should be manageable
- ◆ it should be timely (in other words it should be communicated at the appropriate time)
- ◆ it should be communicated via an appropriate channel of communication
- ◆ it should be provided at a cost which is less than the value of the benefits it provides

## 5 Responsibility Accounting

Responsibility accounting is a situation where managers will have specific information needs.

It is a system making individual managers responsible for the performance of their individual part of the business.

The manager is responsible for producing budgets for his/her department, has the authority to make decision regarding his/her department, and is measured on the performance of his/her department.

There will be more discussion of responsibility accounting in the chapters on performance measurement and divisionalisation.

Inseparable from responsibility accounting is the need for a **budgetary control system**. The purpose of this is to continually monitor the performance of a department against budget, and to take necessary action to correct any deviations.

Clearly, in order to produce budgets, to make decisions, and to control performance, the manager will continually need information relating to his/her department.

## SOURCES OF MANAGEMENT INFORMATION

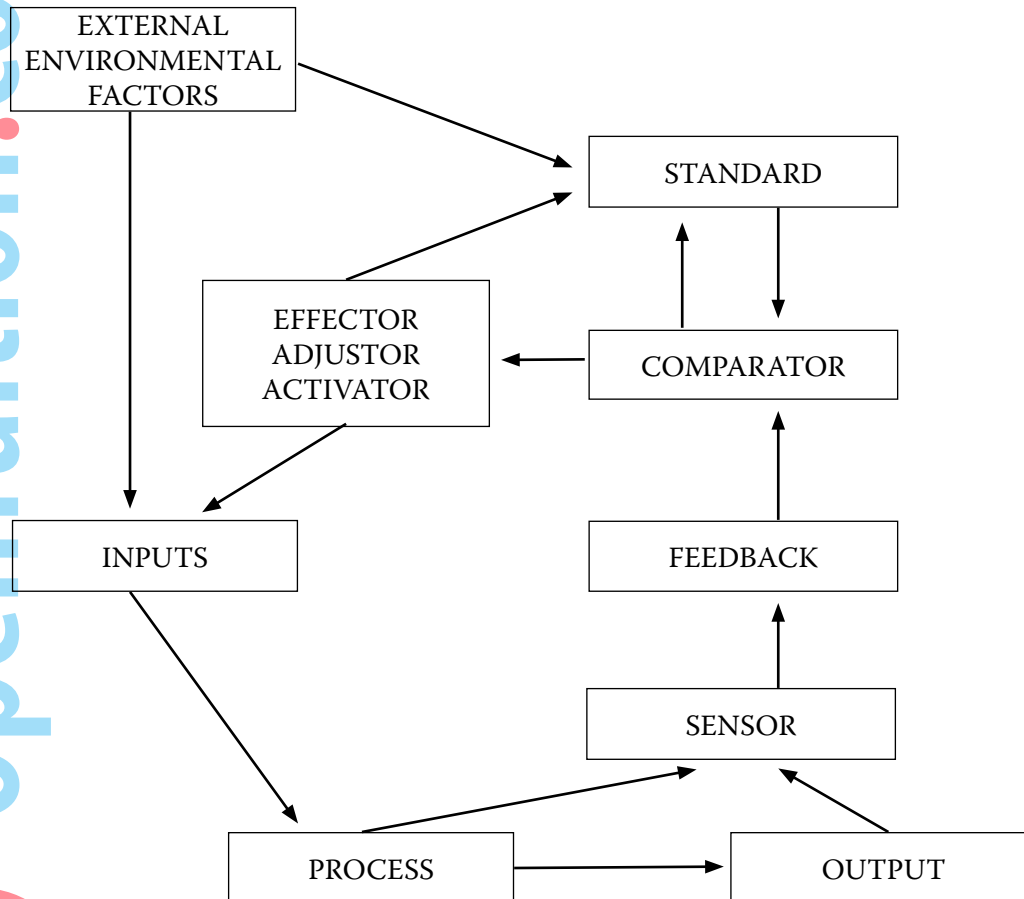
## 6 Control systems

Control systems are necessary throughout an organisation in order to monitor performance so that corrective action may be taken where appropriate.

An example is a budgetary control system, where costs might be compared against budget and action taken to attempt to correct any over-spends.

Another example is a quality control system, where production is compared against pre-defined standards, and again appropriate action is taken when the quality deviates from the standard.

All control systems operate in the same basic way, and you should be aware of the diagram below and the terminology.



## 7 Feedback / feedforward control

**Feedback control** is where the outputs of a process are measured and information is then provided regarding corrective action, after the outputs have been produced.

Variance analysis is an example of this. At the end of (say) each month, variances are calculated. If there is an over-spend in January, then attempts will be made to correct the problem for the future. It is however too late to do anything about January!

**Feedforward control** is where a problem is identified and corrective action taken, before the problem occurs.

An example of this is one use of the budgeting process. If a budget is prepared for the coming year and forecasts an unacceptably low profit, then ways will be looked for of changing plans in order to increase the profit. For example, increasing selling prices or cutting costs.

## 8 Negative / positive feedback

These terms refer to the way that feedback results in control – be careful because at first glance they may seem to be the opposite of what you might expect!

**Negative feedback** is where the control mechanism reduces the problem, and is what we would desire to achieve.

**Positive feedback** however, is where the feedback is delayed and as a result the control mechanism makes the problem worse.

## 9 Benchmarking

Benchmarking is the practice of identifying an appropriate organisation whose performance may be used as a comparator (or benchmark) as a way of measuring performance.

Benchmarking is usually carried out in co-operation with other companies, either within a group of companies (intra-group benchmarking), or with other non-competing businesses with similar processes, suppliers and customer bases (inter-industry benchmarking).

## Chapter 10

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# FINANCIAL PERFORMANCE MEASUREMENT

## 1 Introduction

It is very common in the examination to be given information about a company and to be asked to comment on the performance. It is clearly important in practice to have measures in order to determine whether or not the company is performing well.

It is important to measure both financial and non-financial performance, but in this chapter we will consider only financial performance. You will be given extracts from the company's accounts for several years and be expected to analyse and interpret this information.

## 2 Approach

Although you must be aware of several key measures of financial performance, it is important that you do not fall into the trap of simply calculating every ratio imaginable for every year available. What the examiner is after is much more of an over-view and being able to determine the key measures and to comment adequately.

The following points should be considered:

- ◆ ***What is it that you are being asked to comment on?***

For example, if you are looking at the information from the shareholders perspective, then growth (or otherwise) in the share price will be of great interest.

However, if you are looking at how well the managers are performing, the growth (or otherwise) in the profit (to the extent to which they control it) is perhaps of more importance.

### 2.1 Growth:

Always make some comment as to the level of growth. The amount of detail required depends on the information available and the number of marks allocated, but growth in turnover, in profit, and in share price are all potentially relevant.

Look at the overall level of growth and look for any trends, do not waste time doing detailed year-by-year analysis.

## 2.2 Areas for analysis:

Subject again to exactly what you are being asked to comment on, the following areas are likely to be worthy of consideration:

**Profitability** – how well a company performs, given its asset base

**Liquidity** – the short term financial position of the company

**Gearing** – the long-term financial position of the company

**Investors ratios** – how well investors will appraise the company

## 2.3 Bases for comparison:

Most measures mean little on their own, and are only really useful when compared with something.

Depending on the information given in the question, any comparison is likely to be one of the following:

- ◆ with previous years for the same company
- ◆ with other similar companies
- ◆ with industry averages

## 3 Common ratios

The following is a list of the most common ratios that may be appropriate. However, do not simply calculate every ratio for every question – think about what you are trying to consider and choose the most appropriate ratios. If relevant by all means calculate additional ratios – there is no one set of ratios.

### 3.1 Profitability ratios

$$(a) \text{ Return on capital employed (ROCE)} = \frac{\text{Profit before interest and tax (PBIT)}}{\text{Capital employed}} \%$$

$$(b) \text{ Net profit margin} = \frac{\text{PBIT}}{\text{Turnover}} \%$$

$$(c) \text{ Gross profit margin} = \frac{\text{Gross profit}}{\text{Turnover}} \%$$

$$(d) \text{ Asset turnover} = \frac{\text{Turnover}}{\text{Capital employed}} \%$$

Note: Capital employed = shareholders funds plus 'creditors amounts falling due after more than one year' plus long term provisions for liabilities and charges.

Net profit margin  $\times$  asset turnover = ROCE

$$\frac{\text{PBIT}}{\text{Turnover}} \times \frac{\text{Turnover}}{\text{Capital employed}} = \frac{\text{PBIT}}{\text{Capital employed}}$$



## FINANCIAL PERFORMANCE MEASUREMENT

**3.2 Liquidity ratios**

- (a) Current ratio =  $\frac{\text{Current assets}}{\text{Current liabilities}}$
- (b) Acid test (quick ratio) =  $\frac{\text{Current assets less stock}}{\text{Current liabilities}}$
- (c) Debtors payment period =  $\frac{\text{Average debtors}}{\text{Credit sales}} \times 365$
- (d) Stock days =  $\frac{\text{Average stock}}{\text{Cost of sales}} \times 365$
- (d) Creditors payment period =  $\frac{\text{Average creditors}}{\text{Purchases}} \times 365$

**3.3 Gearing ratios**

- (a) Gearing ratio =  $\frac{\text{Prior charge capital (long term debt)}}{\text{Long term debt + equity (shareholders funds)}}$
- (b) Interest cover =  $\frac{\text{PBIT}}{\text{Interest}}$
- (c) Operating gearing =  $\frac{\text{Contribution}}{\text{PBIT}}$

**3.4 Investor ratios**

- (a) P/E ratio =  $\frac{\text{Market price (pence)}}{\text{EPS (pence)}}$
- (b) Earnings per share (EPS) =  $\frac{\text{Earnings available for distribution to equity}}{\text{Number of shares in issue and ranking for dividend}}$
- (c) Dividend yield =  $\frac{\text{Dividend per share (pence)}}{\text{Market price (pence)}}$

**4 EBITDA**

EBITDA is a financial performance measure that has appeared relatively recently. It stands for 'earnings before interest, taxes, depreciation and amortisation' and is particularly popular with high-tech startup businesses.

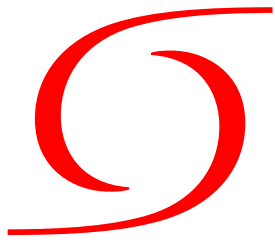
Consideration of earnings before interest and tax has long been common – before interest in order to measure the overall profitability before any distributions to providers and capital, and before tax on the basis that this is not under direct control of management.

The reason that EBITDA additionally considers the profit before depreciation and amortisation is in order to approximate to cash flow, on the basis that depreciation and amortisation are non-cash expenses.

A major criticism, however, of EBITDA is that it fails to consider the amounts required for fixed asset replacement.



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## Chapter 11

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# DIVISIONAL PERFORMANCE MEASUREMENT

## 1 Introduction

In this chapter we will consider the situation where an organisation is divisonalised (or decentralised) and the importance of proper performance measurement in this situation.

We will also consider the possible problems that can result from the use of certain standard performance measures.

## 2 The meaning of divisionalisation

Divisionalisation is the situation where managers of business areas are given a degree of autonomy over decision making i.e. they are given the authority to make decision without reference to senior management. In effect they are allowed to run their part of the business almost as though it were their own company.

### 2.1 Advantages of divisionalisation:

## 2.2 Problems with divisionalisation:

### 3 The use of performance measures to control divisional managers

If managers are to be given autonomy in their decision making, it becomes impossible for senior management to 'watch over' them on a day-to-day basis – this would remove the whole benefit of having divisionalised!

The way to control their performance is to establish in advance a set of measures that will be used to evaluate their performance at (normally) the end of each year.

These measures provide a way of determining whether or not they are managing their division well, and also communicate to the managers how they are expected to perform.

It is of critical importance that the performance measures are designed well.

For example, suppose a manager was simply given one performance measure – to increase profits. This may seem sensible, in that in any normal situation the company will want the division to become more profitable. However, if the manager expects to be rewarded on the basis of how well he achieves the measure, all his actions will be focussed on increasing profit to the exclusion of everything else. This would not however be beneficial to the company if the manager were to achieve it by taking actions that reduced the quality of the output from the division. (In the long-term it may not be beneficial for the manager either, but managers tend to focus more on the short-term achievement of their performance measures.)

It is therefore necessary to have a series of performance measures for each division manager.

Maybe one measure will relate to profitability, but at the same time have another measure relating to quality. The manager will be assessed on the basis of how well he has achieved all of his measures.

We wish the performance measures to be goal congruent, that is to encourage the manager to make decisions that are not only good for him but end up being good for the company as a whole also.

In this chapter we will consider only financial performance. However, non-financial performance is just as important and we will consider that in the next chapter.

## 4 Controllable profits

The most important financial performance measure is profitability.

However, if the measure is to be used to assess the performance of the divisional manager it is important that any costs outside his control should be excluded.

For example, it might be decided that pay increases in all division should be fixed centrally by Head Office. In this case it would be unfair to penalise (or reward) the manager for any effect on the division's profits in respect of this cost. For these purposes therefore a profit and loss account would be prepared ignoring wages and it would be on the resulting controllable profit that the manager would be assessed.

## 5 Investment centres and the problem with measuring profitability.

As stated earlier, divisionalisation implies that the divisional manager has some degree of autonomy.

In the case of an investment centre, the manager is given decision making authority not only over costs and revenues, but additionally over capital investment decision.

In this situation it is important that any measure of profitability is related to the level of capital expenditure. Simply to assess on the absolute level of profits would be dangerous – the manager might increase profits by \$10,000 and be rewarded for it, but this would hardly be beneficial to the company if it had required capital investment of \$1,000,000 to achieve!!

The most common way of relating profitability to capital investment is to use Return on Investment as a measure. However, as we will see, this can lead to a loss of goal congruence and a measure known as Residual Income is theoretically better.

## 6 Return on Investment (ROI)

ROI is defined as: Controllable division profit expressed as a percentage of divisional investment

It is equivalent to Return on Capital Employed and this is one of the reasons that it is very popular in practice as a divisional performance measure.

**Example 1**

Arcania plc has divisions throughout the Baltic States.

The Ventspils division is currently making a profit of \$82,000 p.a. on investment of \$500,000.

Arcania has a target return of 15%

The manager of Ventspils is considering a new investment which will require additional investment of \$100,000 and will generate additional profit of \$17,000 p.a..

- (a) Calculate whether or not the new investment is attractive to the company as a whole.
- (b) Calculate the ROI of the division, with and without the new investment and hence determine whether or not the manager would decide to accept the new investment.

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In the above example, the manager is motivated to accept an investment that is attractive to the company as a whole. He has been motivated to make a goal congruent decision.

Note that in this illustration we have used the opening book value for capital invested. In practice it may be more likely that we would use closing book value (which would be lower because of depreciation). There is no rule about this – in practice we could do whichever we thought more suitable. However, in examinations always use opening book value unless, of course, you are told to do differently.

However, there can be problems with a ROI approach as is illustrated by the following example:



**Example 2**

The circumstances are the same as in example 1, except that this time the manager of the Ventspils division is considering an investment that has a cost of \$100,000 and will give additional profit of \$16,000 p.a.

- (a) Calculate whether or not the new investment is attractive to the company as a whole.
- (b) Calculate the ROI of the division, with and without the new investment and hence determine whether or not the manager would decide to accept the new investment.

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In this example the manager is not motivated to make a goal congruent decision. For this reason, a better approach is to assess the managers performance on Residual Income.

## 7 Residual Income (RI)

Instead of using a percentage measure, as with ROI, the Residual Income approach assesses the manager on absolute profit. However, in order to take account of the capital investment, notional (or imputed, or 'pretend') interest is deducted from the Income Statement profit figure. The balance remaining is known as the Residual Income.

(Note that the interest charge is only notional, and is only made for performance measurement purposes).





## 10 Economic Value Added

Economic value added (EVA) is a performance metric that is very similar in approach to Residual Income, and is defined as being:

Net operating profit after tax – WACC x book value of capital employed

The principle behind it is that a business is only really creating value if its profit is in excess of the required minimum rate of return that shareholders and debt holders could get by investing in other securities of comparable risk.

EVA allows all management decisions to be modelled, monitored, communicated, and compensated in a single and consistent way – always in terms of the value added to shareholder investment.

Several adjustments are required in EVA calculations including:

- ◆ Intangibles (e.g. research expenditure):
  - Add back to net profit
  - Add net book value to capital employed

## DIVISIONAL PERFORMANCE MEASUREMENT

- ◆ Goodwill written off:
  - Add back to net profit
  - Add to capital employed
- ◆ Depreciation:
  - Replace accounting depreciation with economic depreciation
- ◆ Provisions (for bad debts etc.)
  - Add back to net profit
  - Add back to capital employed
- ◆ Interest on debt capital
  - Add back to net profit
- Treat the debt as part of capital employed

**Example 5**

Extracts from the accounts of Value Co are as follows:

**Income Statements:**

	<i>2007</i>	<i>2006</i>
	<i>\$m</i>	<i>\$m</i>
Revenue	608	520
Pre-tax accounting profit (note 1)	134	108
Taxation	<u>(46)</u>	<u>(37)</u>
Profit after tax	88	71
Dividends	<u>(29)</u>	<u>(24)</u>
Retained earnings	<u>59</u>	<u>47</u>

**Balance Sheets:**

	<i>2007</i>	<i>2006</i>
	<i>\$m</i>	<i>\$m</i>
Non-current assets	250	192
Net current assets	<u>256</u>	<u>208</u>
	<u>506</u>	<u>400</u>
Financed by:		
Shareholders' funds	380	312
Medium and long-term bank loans	<u>126</u>	<u>88</u>
	<u>506</u>	<u>400</u>

Note (1): After deduction of the economic depreciation of the company's non-current assets. This is also the depreciation used for tax purposes.

Other information is as follows:

1. Capital employed at the end of 2005 amounted to \$350m.
2. Value Co had non-capitalised leases valued at \$16m in each of the years 2005 to 2007. The leases are not subject to amortisation.
3. Value Co's pre-tax cost of debt was estimated to be 9% in 2006 and 10% in 2007.
4. Value Co's cost of equity was estimated to be 15% in 2006 and 17% in 2007.



## Chapter 12

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# NON-FINANCIAL PERFORMANCE MEASUREMENT

## 1 Introduction

In the last two chapters we were looking at measures of financial performance. However, as we stated, it is important to have a range of performance measures considering non-financial as well as financial matters. This is particularly important in the case of service industries where such things as quality are of vital importance if the business is to grow in the long-term.

In this chapter we will consider the various areas where performance measures are likely to be needed.

Various authors have summarised the areas in different ways and the main ones are summarised in this chapter. However, you cannot be tested on specific authors – any examination questions will be more general. We would suggest that the best ones to learn are the headings used by Fitzgerald and Moon.

## 2 Fitzgerald and Moon

Fitzgerald and Moon focussed on performance measurement in service businesses. They suggested the following areas needing measures of performance:

**Financial performance**

**Competitive performance**

**Quality**

**Flexibility**

**Resource utilisation****Innovation****3 Kaplan and Norton's Balanced Scorecard**

The balanced scorecard (developed by Kaplan and Norton 1992) views the business from four perspectives and aims to establish goals for each together with measures which can be used to evaluate whether these goals have been achieved.

**Possible Measures**

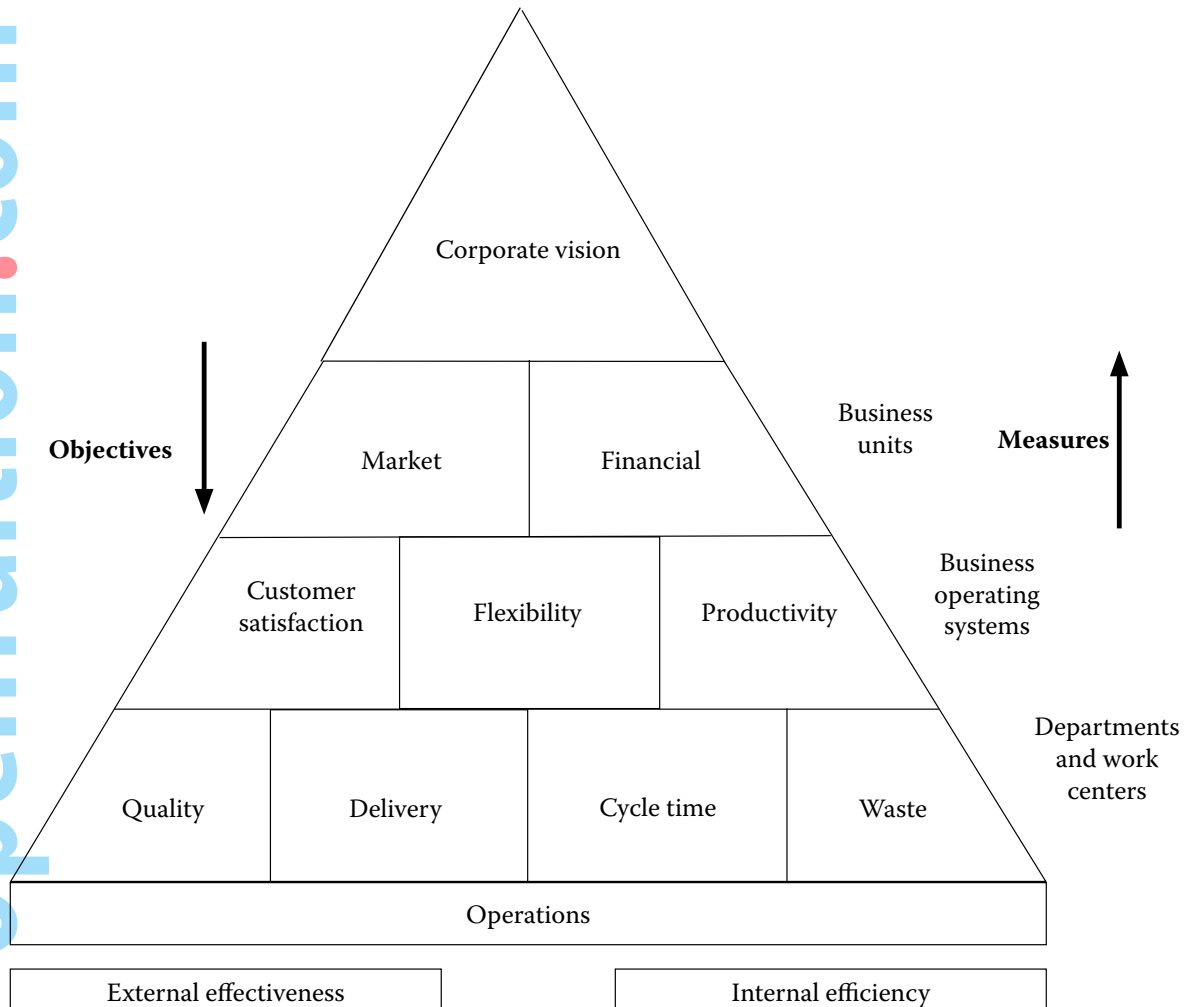
<i>Perspective</i>	<i>Question</i>	<i>Possible Measures</i>
Customer Perspective	What do existing and potential customers value from us?	<ul style="list-style-type: none"> <li>• % Sales from new customers</li> <li>• % On time deliveries</li> <li>• % Orders from enquiries</li> <li>• Customers survey analysis</li> </ul>
Internal Business Perspective	What process must we excel at to achieve our customer and financial objectives?	<ul style="list-style-type: none"> <li>• Unit cost analysis</li> <li>• Process/cycle time</li> <li>• Value analysis</li> <li>• Efficiency</li> </ul>
Innovation and Learning Perspective	How can we continue to improve and create future value?	<ul style="list-style-type: none"> <li>• Number of new products introduced</li> <li>• Time to market for new products</li> </ul>
Financial Perspective	How do we create value for our shareholders?	<ul style="list-style-type: none"> <li>• Profitability</li> <li>• Sales growth</li> <li>• ROI</li> <li>• Cash flow/liquidity</li> </ul>

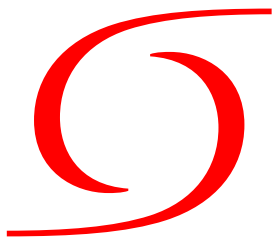


## 4 The Performance Pyramid

Lynch and Cross viewed business as a performance pyramid.

The pyramid views a range of objectives for both external effectiveness and internal efficiency. The objectives can be achieved through measures at various levels as shown in the pyramid below. These measures are seen to interact with each other both horizontally at each level and vertically across levels in the pyramid.





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## Chapter 13

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# PERFORMANCE IN THE NOT-FOR-PROFIT SECTOR

## 1 Introduction

Non-profit seeking organisations are those whose prime goal cannot be assessed by economic means. Examples would include charities and state bodies such as the police and the health service.

For this sort of organisation, it is not possible or desirable to use standard profit measures. Instead (in for example the case of the health service) the objective is to ensure that the best service is provided at the best cost.

In this chapter we will consider the problems of performance measures and suggestions as to how to approach it.

## 2 Problems with performance measurement

- ◆ multiple objectives

Even if all objectives can be clearly identified, it may be impossible to identify an over-riding objective or to choose between competing objectives

- ◆ the difficulty of measuring outputs

An objective of the health service is obviously to make ill people better. However, how can we in practice measure how much better they are?

- ◆ financial constraints

Public sector organisations have limited control over the level of funding that they receive and the objectives that they can achieve.

- ◆ political, social and legal considerations

The public have higher expectations from public sector organisations than from commercial ones, and such organisations are subject to greater scrutiny and more onerous legal requirements.

- ◆ little market competition and no profit motive.

### 3 Value for money

Non-profit organisations, such as the health service, are expected to provide value for money.

This can be defined as providing a service in a way which is economical, efficient and effective.

Performance should be assessed under each of these '3 E's'

#### **Economy**

Attaining the appropriate quantity and quality of inputs at the lowest cost

#### **Efficiency**

Maximising the output for a given input (or, for a given output achieving the minimum input).

#### **Effectiveness**

Determining how well the organisation has achieved its desired objectives.

## Chapter 14

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# TRANSFER PRICING

## 1 Introduction

Transfer prices were examined in a previous examination. It is, however deemed knowledge for this paper and can be asked again. It is therefore repeated here for revision.

## 2 What is a transfer price?

The transfer price is the price that one division charges another division of the same company for goods or services supplied from one to the other. It is an internal charge – the ‘sale’ of one division is the ‘purchase’ of the other. Although it will be reflected in the results for each division individually, there is no effect in the accounts of the company as a whole.

### Example 1

Division A produces goods and transfers them to Division B which packs and sells them to outside customers.

Division A has costs of \$10 per unit, and Division B has additional costs of \$4 p.u.. Division B sells the goods to external customers at a price of \$20 p.u.

**Assuming a transfer price between the divisions of \$12 p.u., calculate:**

**(a) the total profit p.u. made by the company overall**

**(b) the profit p.u. made by each division**

## 3 Why have a transfer price?

The reason for having a transfer price is to be able to make each division profit accountable. If, in the previous example, there was no transfer price and goods were transferred ‘free of charge’ between the division, then the overall profit for the company would be unchanged. However, Division A would only be reporting costs, and Division B would be reporting an enormous profit. The problem would be compounded if Division A was selling the same product externally as well as transferring to Division B.





**Example 5**

Division A has costs of \$15 p.u., and transfers goods to Division B which has additional costs of \$10 p.u.. Division B sells externally at \$35 p.u.

A can sell part-finished units externally for \$20 p.u.. There is limited demand externally from A, and A has unlimited production capacity.

**Determine a sensible range for the transfer price in order to achieve goal congruence.**

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**Example 6**

Division A has costs of \$15 p.u., and transfers goods to Division B which has additional costs of \$10 p.u.. Division B sells externally at \$35 p.u.

A can sell part-finished units externally for \$20 p.u.. There is unlimited external demand from A, and A has limited production capacity.

**Determine a sensible range for the transfer price in order to achieve goal congruence.**

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**Example 7**

Division A has costs of \$8 p.u., and transfers goods to Division B which has additional costs of \$4 p.u.. Division B sells externally at \$20 p.u.

**Determine a sensible range for the transfer price in order to achieve goal congruence, if Division B can buy part-finished goods externally for:**

- (a) \$14 p.u.
- (b) \$18 p.u.

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## 7 The 'rule' for sensible transfer pricing

The following rule summarises the results from the previous examples:

### 7.1 Minimum transfer price:

### 7.2 Maximum transfer price:

(Note: we always assume that both divisions are manufacturing many products and that discontinuing one product will have no effect on the fixed costs. It is therefore only the marginal costs that we are interested in when applying the above rules.)

## 8 Capacity limitations

In one of the previous examples there was a limit on production in one of the divisions. This problem can be made a little more interesting, although the same rule as summarised in Section 7 still applies.

### Example 8

A is capable of making two products, X and Y.

A can sell both products externally as follows:

	X	Y
External selling price	80	100
Variable costs	<u>60</u>	<u>70</u>
Contribution p.u.	<u>20</u>	<u>30</u>

A has limited labour available. The labour hours required for each product are X: 5 hours p.u., Y: 10 hours p.u.

A has unlimited external demand for both products.

Division B requires product Y from Division A.

**Calculate the minimum transfer price that should be charged by A for supply of Product Y to Division B.**

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## 9 Multinational Transfer Pricing

Globalisation, the rise of multinational companies, and the fact that more than 60% of world trade takes place within multinational organisations means that international transfer pricing is very important.

When transfers occur between different countries, then there are additional factors to take into account. These include the following:

### **Taxation in the different countries**

#### **Import tariffs**

#### **Exchange controls**

#### **Anti-dumping legislation**

#### **Competitive pressures**

#### **Repatriation of funds**

In practice, most countries tax laws will include rules about transfer pricing.

Usually they encourage a transfer price at market value to ensure that both countries receive a fair share of the profits. However, it is not always easy to establish what is a fair market value.

A transfer price at full cost is usually acceptable to tax authorities, but transfer prices at variable cost are unlikely to be acceptable.

## Chapter 15

# PREDICTING AND PREVENTING CORPORATE FAILURE

### 1 Introduction

This chapter considers the reasons for companies failing, and various suggestions as to how corporate failure might be predicted.

Finally we look at possible ways in which failure might be prevented.

### 2 Corporate failure models

There are two types of corporate failure models: quantitative models, which are based largely on published financial information; and qualitative models, which are based on an internal assessment of the company concerned.

### 3 Quantitative models

- ◆ Beaver

Beaver looked at various financial ratios and concluded that the best predictor was the ratio of cash flow to total debt.

The approach is simple, but suffers as a result because in reality many factors are likely to result in failure – not just one factor (a univariate approach).

- ◆ Altman's Z score

Altman took a multivariate approach by considering a combination of ratios and combining them to produce a single score – the Z score – with a low score indicating poor financial health.

$$Z = 1.2 X1 + 1.4 X2 + 3.3 X3 + 0.6 X4 + 0.999 X5$$

Where:

X1 = working capital / total assets

X2 = retained earnings / total assets

X3 = profit before interest and tax / total assets

X4 = market value of equity / book value of debt

X5 = sales / total assets

A Z-score of less than 1.8 indicates strong potential for failure; between 1.8 and 2.99 is the 'grey' (or warning) zone; above 2.99 is the 'safe' zone.

There have been several refinements of the Z-score equation, but all have the same basic idea of combining ratios.

## 4 Qualitative models

- ◆ Argenti's A-score

Argenti developed a model that looked at non-accounting variables. He produced a list of possible defects, mistakes, and symptoms of failure with a mark against each.

If the defect etc. exists, then it scores the full mark. If it does not exist then it scores zero.

There is a pass mark for each section of the list, and an overall, total, pass mark.

### Defects:

Chief Executive is an autocrat	8 marks
Chief Executive is also the chairman	4 marks
Passive board of directors	2 marks
Lack of skills balance in the board	2 marks
Lack of management depth	1 mark
No budgets or budgetary controls	3 marks
No cash flow plans	3 marks
No costing system	3 marks
Poor response to change	15 marks

The pass mark for this section is 10 marks (i.e. a mark of less than 10 is satisfactory)

### Mistakes:

High gearing	15 marks
Overtrading	15 marks
Too much reliance on one big project	15 marks

The pass mark for this section is 15 marks

### Symptoms:

Financial signs (such as the Z score)	5 marks
Creative Accounting	4 marks
Non-financial signs (e.g. low morale)	3 marks
Terminal signs	1 mark

There is no separate pass mark for this section.

The overall total pass mark is 25, and it is suggested that a score in excess of this is cause for concern, as is a score above the pass mark in the first two individual sections.

## 5 Avoiding failure

Ross and Kami listed 'Ten Commandments' that should be followed by a company to avoid failure:

- ◆ You must have a strategy
- ◆ You must have controls
- ◆ The Board must participate
- ◆ You must avoid one-man rule
- ◆ There must be management in depth
- ◆ Keep informed of, and react to, change
- ◆ The customer is king
- ◆ Do not misuse computers
- ◆ Do not manipulate your accounts
- ◆ Organise to meet employees needs





## Chapter 16

# DISCOUNTED CASH FLOW TECHNIQUES

### 1 Introduction

You have studied investment appraisal previously so most of this chapter will be revision for you. Of the few new items in this chapter, the most important is Modified Internal Rate of Return and you should make sure that you learn the technique involved.

### 2 Net present value calculations

Here is a list of the main points to remember when performing a net present value calculation. After we will look at a full example containing all the points.

- Remember it is **cash flows** that you are considering, and only cash flows. Non-cash items (such as depreciation) are irrelevant.
- It is only **future cash flows** that you are interested in. Any amounts already spent (such as market research already done) are sunk costs and are irrelevant.
- There is very likely to be **inflation** in the question, in which case the cash flows should be adjusted in your schedule in order to calculate the actual expected cash flows. The actual cash flows should be discounted at the actual cost of capital (the money, or **nominal** rate). (Note: alternatively, it is possible to discount the cash flows ignoring inflation at the cost of capital ignoring inflation (the **real** rate). We will remind you of this later in this chapter, but it is much less likely to be relevant in the examination.)
- There is also very likely to be **taxation** in the question. Tax is a cash flow and needs bringing into your schedule. It is usually easier to deal with tax in two stages – to calculate the tax payable on the operating cash flows (ignoring capital allowances) and then to calculate separately the tax saving on the capital allowances.
- You are often told that cash is needed to finance additional **working capital** necessary for the project. These are cash flows in your schedule, but they have no tax effects and, unless told otherwise, you assume that the total cash paid out is received back at the end of the project.





### 3 Internal rate of return

One problem with decision making using the Net Present Value is that the Cost of Capital is at best only an estimate and if it turns out to be different that the rate actually used in the calculation, then the NPV will be different. Provided that the NPV remains positive then the project will still be worthwhile, but if the NPV were to become negative that the wrong decision will have been made.

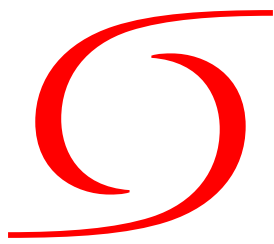
The Internal Rate of Return (IRR) is that rate of interest at which the NPV of the project is zero (i.e. breakeven).

In order to estimate the IRR we calculate the NPV at two different rates of interest, and then approximate between the two assuming linearity. (In fact, the relationship is not linear and so any estimate will only be approximate)





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## Chapter 17



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# BEHAVIOURAL ASPECTS OF PERFORMANCE MANAGEMENT

## 1 Introduction

If one knows that one's performance is being measured (and very often one's rewards are tied into the performance measure) then it is human nature to concentrate on those aspects of the work that are being measured.

It is important therefore that the performance measures encourage goal congruence (i.e. encourage working for the overall good of the company) and that they encourage long-term as opposed to short-term thinking.

## 2 Recap of earlier chapters

We have already discussed in earlier chapters the use of Return on Investment, Residual Income, and Economic Value Added as ways of measuring financial performance, and the effect of these on long-term and short-term thinking.

We have also discussed in earlier chapters the importance of having a range of performance measures, looking at non-financial as well as financial performance.

## 3 Potential benefits of reward schemes

Management encourage employees to achieve goals by having rewards linked to their success of failure in achieving desired levels of performance.

Potential benefits of implementing a reward scheme include:

- ◆ Rewards and incentives shape the behaviour of employees – a well-designed scheme will be consistent with the organisational objectives
- ◆ A reward scheme provides an incentive to achieve good performance.
- ◆ Key incentives can be emphasised in the reward scheme – it is a way of communicating the goals of the company to the employee.
- ◆ An effective scheme will create an environment in which all employees are focussed on continuous improvement.
- ◆ Schemes that incorporate share ownership can encourage behaviour that in the longer-term increases the market value of the business.

## 4 Specific behavioural problems

In one of his articles for Student Accountant, the previous examiner highlighted the following specific problems that can occur with performance measurement schemes:

- ◆ Tunnel vision  
Undue focus on performance measures to the detriment of other areas
- ◆ Sub-optimisation  
Undue focus on some objectives resulting in other objectives not being achieved
- ◆ Myopia  
Focussing on the short-term resulting in the ignoring of the long-term
- ◆ Measure fixation  
Behaviour and activities in order to achieve specific performance measures, that may not be effective
- ◆ Misrepresentation  
Using creative reporting to suggest that performance measures have been achieved
- ◆ Gaming  
Deliberate distortion of the measure in order to achieve some strategic advantage.
- ◆ Ossification  
The unwillingness to change a performance measure scheme once it has been set up.

## 5 Suggested ways of addressing the problems

- ◆ Involve staff at all levels in the development and implementation of the scheme
- ◆ Be flexible in the use of performance measures
- ◆ Keep the performance measurement system under constant review

## Chapter 18

 Free lecture available for this chapter, [click here](#)

# CURRENT DEVELOPMENTS IN MANAGEMENT ACCOUNTING

## 1 Introduction

In this chapter we will look at a few modern ideas in management accounting. Some of them you will have seen before in your studies for Paper F5, but others are here for the first time.

## 2 The changing role of the management accountant

The traditional role of the management accountant has been to exercise control, and for this reason they have been largely independent of the operational managers.

More recently management accounting has focussed more on business support. According to Burns and Scapens, there are three main reasons for the change in the management accountants role:

- ◆ changes in technology  
the changes in information technology have improved the amount of information available and broadened the availability of it.
- ◆ changes in management structure  
the responsibility for budgeting has moved from the centre to individual managers leaving the management account to focus more on strategies for improvement.
- ◆ changes in the level of competition  
increase in competition has lead to a more commercial orientation and more long-term focus as opposed to short-termism.

## 3 Total Quality Management (TQM)

TQM is defined as “the continuous improvement in quality, productivity and effectiveness obtained by establishing management responsibility for processes as well as outputs. In this every process has an identified process owner and every person in an entity operates within a process and contributes to its improvement” (!!)

Any manufacturing company will want to deliver goods to the customer that are of sufficiently high quality to avoid goods being returned. In order to check this, the company will have some form of quality control checks on goods leaving the factory.

However, even though good quality control will results in poor quality goods being rejected, and therefore not reaching the customer, there remain the costs associated with waste and poor quality work.

It is therefore important that all possible steps are taken not only to check quality at each stage, but to design processes and educate the workforce to facilitate good quality production. If everything is done right first time, there will be no quality control problems and no waste of materials or time.

### 3.1 Costs associated with quality:

**Costs of conformance** (i.e. of improving quality)

- ◆ **Prevention costs**

- ◆ **Appraisal costs**

**Costs of non-conformance** (i.e. of allowing poor quality)

- ◆ **Internal failure costs**

- ◆ **External failure costs**



## 4 Just-in-time (JIT)

Traditionally, most manufacturing companies have considered it necessary to have a certain level of stock of raw materials, work-in-progress, and finished goods.

However, not only may this be costly in terms of physically holding the stock and in terms of the possibility of damage and obsolescence, but also the requirement to hold stock may be symptomatic of inefficiencies within the company.

For example, the level of work-in-progress is determined by the length of time of the manufacturing process. If the process can be streamlined and production time reduced, then the level of work-in-progress will be reduced but the company will make additional gains as a result of greater efficiency.

With a just-in-time approach, the focus is on allowing the demand to determine the production ('demand-pull' production). This results in greater customer satisfaction, savings resulting from greater efficiency, and savings resulting from the need to have lower stock levels.

### 4.1 Conventional reasons for keeping stocks:

**Raw materials**

**Work-in-progress**

**Finished goods**

#### 4.2 Main features of a just-in-time approach:

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### 5 Target costing

Traditionally it has been the cost of producing an item that has driven the selling price – the first step was to estimate the production cost and then to decide on a selling price. However, this approach ignored the effect of the selling price on the demand for the product, and also gave no direct incentive to reduce costs.

Target costing is a market driven approach and consists of the following steps:

- ◆ from research of the market determine a selling price at which the company expects to achieve the desired market share – the target selling price.
- ◆ Decide on the profit required (e.g. a required profit margin, or a required return on investment)
- ◆ Calculate the maximum cost per unit in order to achieve the required profit – this is the target cost
- ◆ Estimate the actual cost of production and compare with the target cost.

**Example 1**

Packard plc are considering whether or not to launch a new product. The sales department have determined that a realistic selling price will be \$20 per unit.

Packard have a requirement that all products generate a gross profit of 40% of selling price.

**Calculate the target cost.**

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**Example 2**

Hewlett plc is about to launch a new product on which it requires a pre-tax ROI of 30% p.a..

Buildings and equipment needed for production will cost \$5,000,000.

The expected sales are 40,000 units p.a. at a selling price of \$67.50 p.u..

**Calculate the target cost.**

### 5.1 The use of the target cost

Once the target cost has been determined, it will be compared with the estimated actual cost of production. Any excess of the actual cost over the target cost is known as the target cost gap and the company will then be looking for ways of closing this gap.

Possible 'solutions' to the target cost gap:

## 6 Kaizen costing

Is the process of cost reduction during the manufacturing phase of an existing product. The Japanese word kaizen refers to continual and gradual improvement through small betterment activities, rather than large or radical improvement made through innovation or large investments in technology. Kaizen costing is most consistent with the saying "slow and steady wins the race."

Whereas target costing is used during the design phase of a new product, Kaizen costing is used during the manufacturing phase and involves team work by employees continually looking for ways of reducing costs and improving quality

## 7 Environmental management accounting

Businesses have become increasingly aware of the environmental implications of their operations. Poor environmental behaviour has an adverse impact on the business due to the possibility of fines, loss of sales etc.. As a consequence, environmental issues need to be measured and managed.

Techniques that are useful for managing environmental costs include:

- ◆ input / output analysis  
record material flows in order to discover what happens to the material input – what proportion of it ends up in the final product, what proportion ends up as waste, etc..
- ◆ flow cost accounting  
concentrates more on where material losses are occurring within the business, with the aim of reducing the quantities of materials used.
- ◆ environmental activity based costing  
ABC distinguishing between environment –related costs (e.g. direct waste disposal costs) and environment –driven costs (more general overheads e.g. higher staff costs)
- ◆ life cycle costing  
e.g. Xerox developed new packing for photocopiers that could be used both for the delivery of new machines and the return by customers of old machines – the packaging was re-usable.

## Paper P5

# ANSWERS TO EXAMPLES

### Chapter 1

NO EXAMPLES

### Chapter 2

NO EXAMPLES

### Chapter 3

#### ANSWER TO EXAMPLE 1

	<i>Fixed Budget</i>	<i>Flexed Budget</i>	<i>Actual</i>	<i>Variances</i>	
Sales	100,000	120,000	122,000	2,000	(F)
Materials	50,000	60,000	60,000	-	
Labour	25,000	30,000	28,500	1,500	(F)
Variable o/h	12,500	15,000	15,000	-	
Fixed o/h	10,000	10,000	11,000	1,000	(A)
	97,500	115,000	114,500	500	(F)
Profit	\$2,500	\$5,000	\$7,500	2,500	(F)

Original budgeted profit	2,500	
Sales volume variance	2,500	(F)
Flexed budget profit	5,000	
Sales price variance	2,000	(F)
Labour variance	1,500	(F)
Fixed overhead variance	1,000	(A)
Actual profit	\$7,500	

### Chapter 4

#### ANSWER TO EXAMPLE 1

<i>units</i>	<i>Average time</i>	<i>Total time</i>
1	100	100
2	75	150
4	56.25	225
8	42.1875	337.5

	<i>Hours</i>
Time for 8	337.5
Time for first	100
Time for additional 7	237.5 hours

## ANSWERS TO EXAMPLES

## ANSWER TO EXAMPLE 2

$$(a) \quad b = \frac{\log 0.85}{\log 2} = -0.2345$$

$$y = ax^b$$

$$\text{for 16 batches } y = 200 \times 16^{-0.2345} = 104.3912$$

$$\text{Total time for 16} = 16 \times 104.4 = 1,670 \text{ hours}$$

$$\text{Time for first} = 200 \text{ hours}$$

$$\text{Time for next 15} = 1,470 \text{ hours}$$

$$(b) \quad \text{Average time for 30} = 200 \times 30^{-0.2345} = 90.08$$

$$\text{Total time for 30} = 30 \times 90.08 = 2,703 \text{ hours}$$

$$\text{Average time for 29} = 200 \times 29^{-0.2345} = 90.80$$

$$\text{Total time for 29} = 29 \times 90.80 = 2,633 \text{ hours}$$

$$\text{Time for 30}^{\text{th}} = 2,703 - 2,633 = 70 \text{ hours}$$

## Chapter 5

NO EXAMPLES

## Chapter 6

NO EXAMPLES

## Chapter 7

## ANSWER TO EXAMPLE 1

	X	Y	Z
	\$'000	\$'000	\$'000
Gross margin	897.00	1,070.00	1,056.00
Less: Customer specific costs			
Sales visits (80/50/100 × \$420)	(33.60)	(21.00)	(42.00)
Order processing (300/320/480 × \$190)	(57.00)	(60.80)	(91.20)
Despatch costs (300/320/480 × \$350)	(105.00)	(112.00)	(168.00)
Billing and collections (310/390/1,050 × \$97)	(30.07)	(37.83)	(101.85)
Ranking	<u>671.33</u>	<u>838.37</u>	<u>652.95</u>
	2	1	3

## ANSWERS TO EXAMPLES

## ANSWER TO EXAMPLE 2

It can be shown that Frodo Ltd earns more from more from supplying Sam, despite the larger discount percentage.

	<i>Gollum</i>	<i>Sam</i>
	\$	\$
Revenue	25,000	21,000
Less: discount	2,500	3,150
Net revenue	22,500	17,850
Less: cost of shoes	(12,500)	(10,500)
customer transport cost	(5,000)	–
customer administration cost	(250)	(500)
Net gain	4,750	6,850
The difference on a unit basis is considerable.		
Number of pair of shoes sold	500	420
Net gain per pair of shoes sold	\$9.50	\$16.31

## Chapter 8

## ANSWER TO EXAMPLE 1

(a)	Contract size \ Demand	400u	500u	700u	900u
	300u	2,900	3,400	4,400	5,400
	500u	3,500	4,000	5,000	5,000
	700u	4,100	4,600	4,600	4,600
	800u	4,400	4,400	4,400	4,400

- (b) (i) Expected value if contract size =  
 300 units =  $(0.2 \times 2,900) + (0.3 \times 3,400) + (0.4 \times 4,400) + (0.1 \times 5,400) = \mathbf{\$3,900}$   
 500 units =  $(0.2 \times 3,500) + (0.3 \times 4,000) + (0.5 \times 5,000) = \mathbf{\$4,400}$   
 700 units =  $(0.2 \times 4,100) + (0.8 \times 4,600) = \mathbf{\$4,500}$   
 900 units =  $\mathbf{\$4,400}$   
 Sign contract for **700 units**
- (ii) maximin  
 Worst outcome from:  
 300 units =  $\mathbf{\$2,900}$   
 500 units =  $\mathbf{\$3,500}$   
 700 units =  $\mathbf{\$4,100}$   
 800 units =  $\mathbf{\$4,400}$   
 Sign contract for **800 units**
- (iii) Best outcome from  
 300 units =  $\mathbf{\$5,400}$   
 500 units =  $\mathbf{\$5,000}$   
 700 units =  $\mathbf{\$4,600}$   
 800 units =  $\mathbf{\$4,400}$   
 Sign contract for **300 units**

## ANSWERS TO EXAMPLES

(iii) Regret table:

Contract size	Demand	400u	500u	700u	900u
	300u		1,500	1,200	600
500u		900	600	0	400
700u		300	0	400	800
800u		0	200	600	1,000

Worst regret for

300 units = **\$1,500**500 units = **\$900**700 units = **\$800**800 units = **\$1,000**Sign contract for **700 units****Chapter 9****NO EXAMPLES****Chapter 10****ANSWER TO EXAMPLE 1**

Begin with a review of the summary information - notable points

- Growth in turnover
- Growth in PBIT
- Growth in PAT
- Growth in total assets, debtors approx. in line with turnover, creditors at a higher rate.
- Reduction of gearing (result of rights issue?) and reduced interest charge
- Dividend growth
- P/E ratio has overtaken industry average.

	<i>Year 1</i>	<i>Year 2</i>	<i>Year3</i>	<i>Year 4</i>
<b>Profitability</b>				
ROCE	26%			22%
Profit Margin	19.86%			19.15%
Asset Turnover	1.29			1.17
<b>Gearing</b>				
Gearing (book values)	50%	34.6%	6%	3.9%
Interest cover (times)	7.25	9.5	48.5	75.3
<b>Liquidity</b>				
Debtor days	73			70
Creditor days	68			83
<b>Investor ratios</b>				
Share Price	9.63	11.40	9.66	11.95
Market Capitalisation	86.67			143.4
Divi per share (p)	22.2	24.4	21.65	30.0
Divi yield	2.3%	2%	2.2%	2.5%



## ANSWERS TO EXAMPLES

**Chapter 11****ANSWER TO EXAMPLE 1**

$$\text{Return from new project} = \frac{17,000}{100,000} = 17\%$$

- (a) For company:  
 17% > 15% (target)  
 Therefore company wants to accept

- (b) For division

$$\text{ROI (without project)} = \frac{82,000}{500,000} = 16.4\%$$

$$\text{ROI (with project)} = \frac{82,000 + 17,000}{500,000 + 100,000} = 16.5\%$$

ROI of division increases therefore divisional manager motivated to accept.

**ANSWER TO EXAMPLE 2**

$$\text{Return from new project} = \frac{16,000}{100,000} = 16\%$$

- (a) For company: 16% > 15%  
 Company wants to accept

- (b) For division:

$$\text{ROI (without project)} = 16.4\%$$

$$\text{ROI (with project)} = \frac{82,000 + 16,000}{500,000 + 100,000} = 16.3\%$$

**ANSWER TO EXAMPLE 3**

- (1) RI (without project)

Profit	82,000
Less: Interest	
15% × 500,000	(75,000)
	\$7,000

- RI (with project)

Profit	99,000
Less: Interest	
15% × 600,000	90,000
	\$9,000

\$9,000 > \$7,000 manager motivated to accept

- (2) RI (without project) \$7,000

- ROI (with project)

Profit	98,000
Less: Interest	
15% × 600,000	90,000
	\$8,000

\$8,000 > \$7,000 manager motivated to accept

In both cases the decisions are goal congruent

## ANSWERS TO EXAMPLES

## ANSWER TO EXAMPLE 4

(a)		<i>d.f. at 10%</i>	<i>P.V.</i>
0	(250,000)	1	(250,000)
1 – 5	72,500	3.791	274,847
			<u>24,847</u>

NPV positive: company accepts

(b)	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Bal sheet value	<u>250,000</u>	<u>200,000</u>	<u>150,000</u>	<u>100,000</u>	<u>50,000</u>
Net cash flow	72,500	72,500	72,500	72,500	72,500
Less: Depreciation	<u>(50,000)</u>	<u>(50,000)</u>	<u>(50,000)</u>	<u>(50,000)</u>	<u>(50,000)</u>
Profit	22,500	22,500	22,500	22,500	22,500
Less: Interest at 10%	<u>(25,000)</u>	<u>(20,000)</u>	<u>(15,000)</u>	<u>(10,000)</u>	<u>(5,000)</u>
Residual value	<u>(2,500)</u>	<u>2,500</u>	<u>7,500</u>	<u>12,500</u>	<u>17,500</u>

If manager thinks short-term, may reject project

(c) Annual depreciation + interest	$\frac{250,000}{3.791}$	= \$65,946
------------------------------------	-------------------------	------------

	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Bal sheet value	<u>250,000</u>	<u>209,054</u>	<u>164,013</u>	<u>114,468</u>	<u>59,969</u>
Net cash flow	72,500	72,500	72,500	72,500	72,500
Less: Depreciation	<u>(40,946)</u>	<u>(45,041)</u>	<u>(49,545)</u>	<u>(54,499)</u>	<u>(59,949)</u>
Profit	31,554	27,459	22,955	18,001	12,551
Less: Interest at 10%	<u>(25,000)</u>	<u>(20,905)</u>	<u>(16,401)</u>	<u>(11,447)</u>	<u>(5,997)</u>
Residual value	<u>(6,554)</u>	<u>(6,554)</u>	<u>(6,554)</u>	<u>(6,554)</u>	<u>(6,554)</u>

Even if manager thinks short-term, he is motivated to accept.

## ANSWER TO EXAMPLE 5

	<i>2007</i>	<i>2006</i>
	<i>\$m</i>	<i>\$m</i>
Profit after tax	88	71
Non-cash expenses	20	71
After tax interest (0.7 × 8); (0.7 × 6)	<u>5.6</u>	<u>4.2</u>
Adjusted profit	<u>\$113.6</u>	<u>\$95.2</u>

Adjusted Capital Employed

	<i>2007</i>	<i>2006</i>
Capital employed at start of the year	400	350
Non-capital leases	<u>16</u>	<u>16</u>
	<u>\$416</u>	<u>\$366</u>

Weighted average Cost of Capital:

$$2006: (15\% \times 0.7) + (9\% \times 0.7 \times 0.3) = 12.39\%$$

$$2007: (17\% \times 0.7) + (10\% \times 0.7 \times 0.3) = 14.00\%$$

$$\text{EVA } 2006 = 95.2 - (366 \times 0.1239) = \$49.85\text{m}$$

$$\text{EVA } 2007 = 113.6 - (416 \times 0.14) = \$55.36\text{m}$$

## ANSWERS TO EXAMPLES

**Chapter 12**

NO EXAMPLES

**Chapter 13**

NO EXAMPLES

**Chapter 14****ANSWER TO EXAMPLE 1**

(a)	Selling price		20
	Costs:	A	10
		B	<u>4</u>
			<u>14</u>
	Profit		<u>\$6</u>

(b)		<b>A</b>			<b>B</b>
	Total Profit	12		Selling price	20
	Cost	<u>10</u>		Total Profit	12
	Profit	<u>\$2</u>		Costs	<u>4</u>
				Profit	<u>\$4</u>

**ANSWER TO EXAMPLE 2**(a) Transfer price =  $15 \times 1.2 = \$18$  p.u.

(b)	Selling price		30
	Costs:	A	15
		B	<u>5</u>
			<u>20</u>
	Profit		<u>\$10</u>

(c)		<b>A</b>			<b>B</b>
	Total Profit	18		Selling price	30
	Cost	<u>15</u>		Total Profit	18
	Profit	<u>\$3</u>		Costs	<u>5</u>
				Profit	<u>\$7</u>

**ANSWER TO EXAMPLE 3**(a) Transfer price =  $20 \times 1.2 = \$24$  p.u.

(b)	Selling price		30
	Costs:	A	20
		B	<u>8</u>
			<u>28</u>
	Profit		<u>\$2</u>

(c)		<b>A</b>			<b>B</b>
	Total Profit	24		Selling price	30
	Cost	<u>20</u>		Total Profit	24
	Profit	<u>\$4</u>		Costs	<u>8</u>
				Profit	<u>\$(2)</u>

## ANSWERS TO EXAMPLES

**ANSWER TO EXAMPLE 4**For A: T.P.  $> 20$ For B: T.P.  $< 30 - 8$   
 $< 22$ 

Sensible T.P. between \$20 and \$22 p.u.

**ANSWER TO EXAMPLE 5**For A: T.P.  $> 15$ For B: T.P.  $< 35 - 10$   
 $< 25$ 

Sensible range between \$15 and \$25 p.u.

**ANSWER TO EXAMPLE 6**For A: T.P.  $> 20$ For B: T.P.  $< 25$  (as in previous example)  
 $< 22$ 

Sensible range. between \$20 and \$22 p.u.

**ANSWER TO EXAMPLE 7**(a) For A: T.P.  $> 8$ For B: T.P.  $< 14$ 

Sensible range between \$8 and \$14 p.u.

(b) For A: T.P.  $> 8$ For B: T.P.  $< 20 - 4$   
 $< 16$ 

Sensible range between \$8 and \$16 p.u.

**ANSWER TO EXAMPLE 8**

	X	Y
Contribution	\$20	\$30
Hours	5	10
Contribution per hour	\$4	\$3

Therefore, if no transfers to B then A would sell exactly and generate \$4 per hour contribution.

To make transfers of Y worthwhile, A need to charge at least  $70 + (10 \times 4) = \mathbf{\$110 p.u.}$ **Chapter 15****NO EXAMPLES**

ANSWERS TO EXAMPLES

**Chapter 16**

**ANSWER TO EXAMPLE 1**

	0	1	2	3	4	5
Sales		2,000	2,140	2,290	2,450	2,622
Materials		(864)	(933)	(1,008)	(1,088)	(1,175)
Labour		<u>(735)</u>	<u>(772)</u>	<u>(810)</u>	<u>(851)</u>	<u>(893)</u>
Net operating flow		401	435	472	511	554
Tax on operating flow		(100)	(109)	(118)	(128)	(139)
Cost	(1,800)					
Scrap						1,000
Tax on saving on capital allowed		113	84	63	47	(107)
Working Capital	<u>(200)</u>					<u>(200)</u>
Net cash flow	<u>(2,000)</u>	<u>414</u>	<u>410</u>	<u>417</u>	<u>430</u>	<u>1,508</u>
d.f. @ 10%	1	.909	0.826	0.751	0.683	0.621
P.V.	(2,000)	376	339	313	294	936
NPV = \$258						

The NPV is positive and so the project should be accepted.

	0	1	2	3	4	5
Net cash flow	(3,000)	401	510	494	1,700	(167)
d.f. @ 5%	1	.952	0.907	0.864	0.823	0.784
P.V.	(3,000)	382	463	427	1,399	(131)
NPV = \$258						

**ANSWER TO EXAMPLE 2**

	0	1	2	3	4	5
Net cash flow	(2,000)	414	410	417	430	1,508
d.f. @ 10%	1	.870	0.756	0.658	0.572	0.497
P.V.	(2,000)	360	310	274	246	749
NPV = \$ (61) at 15%						
NPV @ 10% = \$258 (from example 1)						

$$IRR = 10\% + \left( \frac{258}{258 + 61} \times 5\% \right) = 14.04\%$$

## ANSWERS TO EXAMPLES

## ANSWER TO EXAMPLE 3

	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Net cash flow	(2,000)	414	410	417	430	1,508
d.f. @ 10%	1	.909	0.826	0.751	0.683	0.621
P.V.	(2,000)	376	339	313	294	936
PV <sub>I</sub>	(2,000)					
PV <sub>R</sub>						2,258

$$\begin{aligned}
 MIRR &= \left( \frac{PV_R}{PV_I} \right)^{\frac{1}{n}} (1 + r_e) - 1 \\
 &= \sqrt[5]{\frac{2,258}{2,000}} \times (1.10) - 1 \\
 &= 0.1270 \text{ or } 12.70\%
 \end{aligned}$$

## Chapter 17

## NO EXAMPLES

## Chapter 18

## ANSWER TO EXAMPLE 1

Selling price = \$20 p.u.

Target return = 40% of selling price

Target Cost = \$12 p.u.

## ANSWER TO EXAMPLE 2

Target return = 30% × 5M = \$1.5M p.u.

Expected revenue = 40,000 × \$67.50 = \$2.7M

Target cost =  $\frac{2.7M - 1.5}{40,000}$  = £30 p.u.