

Chapter 15 Performance measurement

对私立企业进行业绩分析，我们需要从财务和非财务两个层面进行。基于企业的财务报表和非财务数据，我们如何进行业绩评估呢？

Learning outcomes

- Describe, calculate and interpret suitable financial performance indicators (FPIs) for example profitability, liquidity, efficiency and gearing.
- Describe, calculate and interpret suitable non-financial performance indicators (NFPIs).
- Analyse past performance and suggest ways for improving financial and nonfinancial performance.
- Explain the causes and problems created by short-termism and financial manipulation of results.
- Discuss the issues organisations face by favouring short-term financial gain over long-term sustainability.

1. Financial performance

Traditional performance measurement considered only financial measures. This was considered to be appropriate, because it was assumed that the primary objective of all organisations was to maximise shareholder wealth. Focusing on financial measures seemed a natural way to achieve this objective.

The following is the widely used ratios used for financial performance evaluation

1.1 Returns on Capital

Measures describing returns to the various providers of capital include **return on equity (ROE)** and **return on capital employed (ROCE)**:

$$\text{Return on equity} = \frac{\text{profit after tax}}{\text{share capital} + \text{reserve}} \times 100\%$$

$$\text{Return on capital employed} = \frac{\text{PBIT}}{\text{Capital employed}} \times 100\%$$

$$\text{Capital employed} = \text{equity} + \text{non-current liabilities}$$

= total assets – current liabilities

= net current assets + non-current asset

= working capital + non-current assets

Working capital = current asset – current liability

1.1.1 Meaning of Return on Capital Employed

ROCE shows the return generated on the long-term capital invested in the company. This can be **compared with other companies in the same industry sector or to the company's cost of capital.**

1.1.2 Methods to Improve Return on Capital Employed

ROCE is validly improved by **investing in projects that generate a higher return on capital.** Other methods of increasing ROCE that are not actually improvements include:

- Profits and capital employed may be affected by the use of different accounting policies.
- Delaying investment in new plant and machinery or reducing investment in intangible assets.

1.2 Profit Margins

Profit margins relate profit to revenue.

1.2.1 Gross Profit Margin

Gross profit margin = $\frac{\text{gross profit}}{\text{revenue}} \times 100\%$

1.2.2 Meaning of Gross Profit Margin

A falling gross profit margin over time means that:

- Either the selling price is declining, or
- The cost of is increasing, but those increases cannot be passed onto customers.

Gross profit margins may also reflect an organisation's pricing strategy.

- Companies that use a **premium pricing strategy** are likely to have a high gross profit margin.
- Companies that aim to **sell for a low price**, to achieve a **larger volume of sales**, are likely to have a low gross profit margin.

1.2.3 Methods to Improve Gross Profit Margins

Gross profit margins may be improved by:

- **Introducing new products** that are **popular with customers**. These can be sold for a **higher margin**.
- Using **target costing** to reduce cost of sales.

1.2.4 Net Profit Margin

$$\text{Net profit margin} = \frac{\text{net profit}}{\text{revenue}} \times 100\%$$

1.2.5 Meaning of Net Profit Margin

Net profit is sometimes referred to as "**the bottom line**", as it is profit after deducting all costs. The net profit margin shows overall profits as a percentage of revenue.

Net profit margin reflects the following three areas:

1. The **underlying popularity** of the company's products and services (this is also reflected in the gross margin).
2. The amount of **control** the company has **over administrative-type expenses**.
3. **Costs of debt financing**. This will depend partly on whether the company has changed the amount of debt and partly on whether interest rates have changed.

1.2.6 Ways to Improve the Net Profit Margin

- Introduce new products that are popular with customers. These can be sold for a higher margin.
- Use target costing to reduce cost of sales.
- Increasing sales volume should increase net profit margins if a high portion of the company's costs are fixed (e.g. in a training company).
- Better control over administrative expenses (e.g. salaries).
- Using less debt finance.

1.3 Asset Turnover Ratio

The asset turnover ratio relates revenue to the amount of capital invested in the business:

$$\text{Asset turnover ratio} = \frac{\text{revenue}}{\text{capital employed}}$$

It indicates **whether or not the capital invested is appropriate**, given the value of sales revenue. Excessive levels of capital invested will lead to a low turnover ratio.

The asset turnover ratio can be improved by:

- Selling non-current assets that are surplus to requirements.
- Recognising impairments and writing down the value of the assets.
- Improving working capital management

1.3.1 Analysis of Return on Capital Employed

$$\text{ROCE} = \text{Operating profit margin} \times \text{Asset turnover}$$

This relationship can be used to provide insights into the ROCE for a particular business. For example, if a business is experiencing a decline in ROCE this could be due to:

- A decline in the asset turnover ratio;
- A fall in profit margin; or
- A decline in both ratios.

1.4 Liquidity Ratios

Liquidity ratios measure the ability of the organisation to meet its liabilities as they become due.

1.4.1 Current Ratio

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{current liabilities}}$$

Current assets : cash, receivable, inventory

Current liabilities: payable, overdraft

1.4.2 Inventory Holding Period

The shorter the period, the lower the holding costs of inventory, and the faster inventory can be converted into cash.

$$\text{Inventory holding period} = \frac{\text{inventory}}{\text{cost of sales}} \times 365$$

1.4.3 Receivables Collection Period

The shorter the period, the lower the financing costs of receivables, and the faster receivables can be converted into cash.

$$\text{Receivables collection period} = \frac{\text{receivables}}{\text{credit sales}} \times 365$$

1.4.4 Payables Payment Period

Payables are a form of interest-free financing, so the longer the period, the lower the financing cost.

$$\text{Payable payment period} = \frac{\text{payables}}{\text{credit purchase}} \times 365 \quad \text{or} \quad = \frac{\text{payables}}{\text{cost of sales}} \times 365$$

1.4.5 Quick Ratio (Acid Test Ratio)

$$\text{Quick ratio} = \frac{\text{current assets} - \text{inventory}}{\text{current liabilities}}$$

1.4.6 Ways to Increase Liquidity Ratios

Acceptable ways of increasing (i.e. improving) liquidity ratios include:

- Using **long-term finance** (loans and equity) to finance acquisitions of non-current assets. This is usually done to match the financing period with the useful life of the non-current asset.
- Generating **positive cash flows to repay short-term liabilities** on time.

Activity 1 Window Dressing

The following are extracts from the statement of financial position of a company:

	\$000
Receivables	900

Cash	500
Payables	1,000

Required:

- (a) Calculate the quick ratio.
- (b) Re-calculate the ratio if \$400,000 of payments are made just prior to the year end.

1.5 Gearing

Gearing (or "leverage") measures the portion of a company's finance provided by debt. The advantage of debt is that it is a relatively cheap source of financing as:

- Providers of debt require a **lower return** than providers of equity finance because they receive preferential repayment in the event of default and therefore face less risk.
- Interest on debt is also a tax-deductible expense, which further reduces the cost of debt.

1.5.1 Gearing Ratios

$$\text{Gearing ratio} = \frac{\text{debt}}{\text{equity}} \times 100\%$$

$$\text{Or} = \frac{\text{debt}}{\text{debt} + \text{equity}} \times 100\%$$

1.6 Interest Cover

Interest cover shows the extent to which the return on debt (interest) is covered by profit. This measure is used by lenders to determine vulnerability (sensitivity) of interest payments to a fall in profit.

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

1.7 Approach to Financial Performance Evaluation Exam Questions

1.7.1 Approach

Before writing anything, spend a few minutes reviewing and analysing the information. The following is a suggested approach to this planning time:

- Review the "big picture" – look at revenue growth, profit growth and any other major trends visible in the data.
- Calculate a limited number of ratios that you think are necessary to investigate further any trends identified in the analysis
- If capital is given, calculate return on capital employed as this can indicate how well the organisation provides a return on the capital invested.
- Review the information given in the scenario and look for clues which might explain the trends.

Having planned in this way, start to write your answer. Comment on each trend identified. Comment means:

- State what happened (e.g. profits increased by 20% between quarter 1 and quarter 2).
- State why this happened using any relevant information provided in the scenario to help identify why (e.g. revenue increased by 10% and many of the company's costs are fixed, so this has led to a 20% rise in profits).
- Link this to other related items. For example, if depreciation rose significantly due to investment in new machinery, perhaps spending on repairs may have fallen.
- Express an opinion (e.g. an increase of profits of 20% is impressive given that the company is operating in a competitive environment).

Example 1 Financial Performance Measurement

Well-heeled ("WH") is a children's shoe shop located in a suburb of a major capital city. The shop was started in 20X7, and quickly established a reputation for high-quality children's shoes. There are no other shoe shops in this particular suburb, but

there is a large shopping centre in the next suburb 5 km from WH with several children's shoe shops.

The retail space next door to WH became vacant at the start of 20Y0. Because this was also owned by the same landlord, WH decided to rent this space too, expanding the area of the shop from 40 square meters to 60.

The company employs one full-time shop assistant, and starting in 20Y0 employed an additional assistant to work on Saturdays. The owner of WH also works in the shop, but does not take a salary for her time.

The country in which WH is located was hit badly by an economic downturn in the first half of 20Y0, but started to recover in the second half of 20Y0. Inflation in 20X9 and 20Y0 was 2%.

The statements of profit or loss for the years 20X9 and 20Y0 are presented below:

	20X9		20Y0	
	\$	\$	\$	\$
Sales		180,000		240,000
Less: Cost of sales		120,000		168,000
Gross profit		60,000		72,000
<i>Less expenses</i>				
Staff Costs	20,000		30,000	
Rent	7,200		10,800	
Marketing	5,000		6,000	
Light and heat	1,000		1,200	
		33,200		48,000
Net profit		26,800		24,000

Required:

Assess the financial performance of the shop using the information above.

Solution:

Sales revenues increased by one third (33%) between 20X9 and 20Y0. This is impressive given that the shop is only 5 km from a big shopping centre. It is also impressive given that the economy was in recession during the first half of 20Y0. The cause of the increase in sales could be due to increases in prices or increases in volume. Given the fall in the gross profit margin (see following), it would seem more

likely that sales volumes have risen. This reflects the reputation that the shop is gaining locally for high-quality products.

Gross profit margins fell from 33.3% in 20X9 to 30% in 20Y0. This suggests that sales prices have fallen, or that cost increases from suppliers have not been passed on to customers. This is probably due to the fact that during a recession the business recognises that customers are more price conscious. Prices may also have been lowered to gain more customers, and so may be related to the increase in revenues. If gross margins continue to decline, this may cast doubt on the viability of the business in the long term. In this case, however, it seems more likely that the fall in margins will be a temporary phenomenon, caused by the recession.

Staff costs have increased by 50%. This is likely to be due to the employment of an additional shop assistant in 20Y0. Because the assistant works only on Saturdays, however, we would not expect that alone to account for a 50% increase. The existing shop assistant probably was given a pay rise; perhaps to compensate for being busier now that the shop has increased in size. Staff costs as a percentage of revenue have risen from 11.1% in 20X9 to 12.5% in 20Y0.

The owners need to ensure that they do not let this cost continue to rise above the level of sales, or this will reduce profitability.

Rent also has increased, due to the larger space occupied. The cost per square metre has remained constant at \$180 per square metre per year, which shows that the landlord has not increased the rent, possibly due to the recession.

The 50% increase in space has not been matched by such a large increase in revenue, but it does leave the shop space to grow in future years.

Marketing has increased by 20%. Because revenue has increased by 33.3% however, it seems that the marketing effort is producing good results.

Light and heat have increased by 20%. Given the 50% increase in the size of the shop, this is good. In practice, light and heat are items which are outside of the control of businesses, as the prices are set by large energy providers with little competition.

Net profit actually declined, in spite of the increase in revenues. Net profit margin was 10% in 20Y0 compared to 14.9% in 20X9. This fall in margins is mainly due to the fall in gross margins (had gross margin remained constant, profits would be \$8,000 higher), and partly due to additional staff costs and rent. Hopefully gross margins may increase in future years as the economy recovers. The staff costs and rent should remain fairly constant in future years, allowing an increase in revenues to be achieved without an increase in such expenses.

Overall, the owners of the company would probably be disappointed that, in spite of a significant increase in revenues, profits actually fell. However, the business is in a good position to benefit from an economic recovery in 20Y1.

2. Financial Performance Indicators (FPIs)

2.1 Inherent Weaknesses

Traditional performance measurement relied almost exclusively on financial measures. However, since the 1980s, many companies recognised that there are inherent weaknesses in focusing only on financial factors.

- FPIs may lead to excessive focus on cost reduction. Short-term cost reductions may be achieved at the expense of long-term performance due to the effect on staff morale, quality and other factors.
- FPIs ignore the drivers of business success. The things which drive business success are:
 - ✧ Quality;
 - ✧ Delivery;
 - ✧ Customer satisfaction;
 - ✧ After-sales service.
- FPIs can be affected by using different accounting policies and "window dressing" to make the performance look better.

Since the 1980s, therefore, many companies have started to develop **non-financial performance indicators**

2.2 Short-Termism and financial manipulation

Short-termism is when **Managers take a short-term view and concentrate their efforts on achieving the next set of financial targets, effectively ignoring the longer term.**

Short-termism may exist for the following reasons:

- Achieving a bonus now seems much more attractive than achieving a bonus in the future.
- If managers are expecting to be promoted, or there is high management turnover.

Short-termism behavior including:

- Failing to invest in worthwhile project
- Failing to invest in "value building" activities (e.g. research and development, training, advertising and marketing) that may bring long-term benefit
- Cutting down on activities that lead to better quality of a product.
- Reducing headcount

- Salary freeze
- Financial manipulation

2.3 Operational NFPIs

Having set NFPIs consistent with the organisation's strategic objectives, non-financial performance measures can be set at all levels of an organisation.

Example 2 Manufacturing NFPI

Required:

Suggest some possible non-financial performance measures which might be used in a manufacturing organisation to measure the following attributes:

- (a) **Product quality;**
- (b) **Product delivery;**
- (c) **Customer satisfaction; and**
- (d) **After-sales service.**

Attribute	NFPI
(a) Product quality	<ul style="list-style-type: none">• Percentage of items rejected by quality control• Number of items returned by customers
(b) Product delivery	<ul style="list-style-type: none">• Percentage of customer orders delivered on time• Waiting time from order to delivery
(c) Customer satisfaction	<ul style="list-style-type: none">• Number of customers returning• Number of complaints
(d) After-sales service	<ul style="list-style-type: none">• Waiting time• Number of complaints• Customer surveys to measure their satisfaction.

Chapter 16: Further Aspects of Performance Analysis

本章主要研究服务行业以及非盈利性组织何如进行业绩评估，以及企业在进行业绩评估时需要考虑的外部因素。

Learning outcomes

- Explain and interpret the Balanced Scorecard, and the Building Block model proposed by Fitzgerald and Moon.
- Explain the need to allow for external considerations in performance management, including stakeholders, market conditions and allowance for competitors.
- Interpret performance in the light of external considerations and the need to consider sustainability.
- Comment on the problems of having multiple objectives in not-for-profit organisations and the public sector.
- Explain Value for Money (VFM) as a public sector objective and how the 3Es can be used to achieve VFM.

1. banlanced scorecard.

1.1 Introduction

NFPIs became very popular during the 1980s. Two problems arose, however:

- Organisations often ignored financial performance entirely. This is clearly not appropriate when the objective of an organisation is to maximise the wealth of its shareholders.
- Organisations developed too many NFPIs, many of which conflicted, and this resulted in confusion.

In response to these problems, Kaplan and Norton developed the balanced scorecard approach.

The balanced scorecard looks at performance from four different perspectives:

1. **Customer** perspective – how do our customers see us?
2. **Internal business process** perspective – at what must we excel?
3. **Learning (or innovation) and growth** perspective – how can we continue to grow and change in the modern dynamic business environment?

4. **Financial** perspective – how do we look to shareholders?

1.2 Balanced Scorecard Philosophy



1.2.1 Setting Measures and Performance Targets

For each perspective, management needs to identify:

1. Objectives – what are the main objectives?
2. Measures – how can the performance be measured against the objectives?
3. Targets – what targets should be set for each of the measures?
4. Initiatives – what actions could be taken to improve performance?

Example 1 The Balanced Scorecard

For low-cost airlines (e.g. Ryanair and easyJet) to stay competitive, it is necessary for management to develop performance measures which support the carriers' strategy and focus on key aspects of performance. The following measures have been developed to reflect important aspects of the low-cost carrier's business model:

Objective	Measure
<i>Business process perspective</i>	
Punctuality	% of flights on time

Example 1 The Balanced Scorecard	
Effectiveness of direct selling	Enquiry/booking conversion rate
<i>Innovation and growth</i>	
Route network development	Time taken to build traffic to breakeven load factor for new routes
	Number of routes withdrawn
Development of individuals	Expenditure on training
	Internal promotion rates
<i>Customer perspective</i>	
Customer satisfaction	Customer ratings (service/VMF)
	Customer complaint
Customer loyalty	Repeat business
	Switching to other airlines
<i>Financial perspective</i>	
Profitability	Return on capital employed
Financial stability	Gearing
Low costs	Cabin crew cost per seat per km

1.2.2 Leading and Lagging Indicators

- Lagging (downstream) indicators show the **effect of decisions** long after they are made. The balanced scorecard refers to financial measures as a lagging indicator.
- Leading (upstream) indicators **drive future financial performance**. These are the non-financial performance indicators relating to customers, internal business processes and learning and growth.

1.3 Advantages and Disadvantages

Advantages of the balanced scorecard approach to performance measurement include:

- It leads to a **wider view of performance** rather than concentrating on the financial aspects of performance.
- It takes a long-term perspective of business performance and **links performance measurement to the organisation's objectives and therefore its strategy.**
- Using only a **small number of KPIs** ensures that management is able to concentrate on the most important aspect

There are of course difficulties:

- Identifying the **most appropriate measures may be difficult.**
- **Obtaining the data** to determine whether some of the measures have been achieved may **be hard.**
- The balanced scorecard **focuses only on the needs of two stakeholders** – owners and customers; it ignores the needs of other groups, such as employees.

2. Performance Measurement for Service Industries

2.1 Characteristics of Service Industries

Four characteristics of services make performance measurement in service industries more difficult than manufacturing industries.

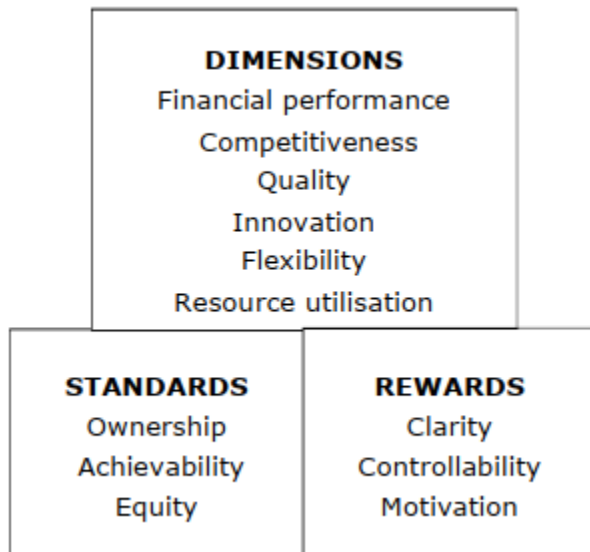
1. **Simultaneity** (inseparability) – services are consumed as they are produced.
2. **Heterogeneity** (i.e. lack of homogeneity) also called variability – each service provided could be unique.
3. **Intangibility** – there is no good with physical features produced
4. **Perishability** – services cannot be stored.

2.2 Fitzgerald and Moon's Building Block Model

2.2.1 Purpose of the Model

Fitzgerald and Moon designed the Building Block model as a framework for **service companies** to use in designing a system of performance evaluation.

There are three "blocks" – dimensions, standards and rewards.



2.2.2 Dimensions

There are six dimensions in the Fitzgerald and Moon model.

Financial performance

1. Competitiveness
2. Quality
3. Resource utilisation
4. Flexibility
5. Innovation.

Financial performance and competitiveness are referred to as **results**, while **quality, resource utilisation, flexibility and innovation** are described as the **determinants**.

2.2.3 Standards

There are three principles that should be applied in setting targets for managers:

1. **Ownership** – managers should take ownership of (believe in) the targets. Managers who participate in setting targets will be more likely to believe in them.
2. **Achievability** – targets should be challenging but achievable; otherwise, managers will dismiss the targets rather than be motivated to achieve them.
3. **Equity** – the organisation should maintain a realistic level of difficulty for its standards across all business areas and be fair and unbiased when assessing performance.

2.2.4 Reward Schemes

Reward schemes may be linked to performance by paying managers bonuses if they achieve targets. Three principles apply:

1. **Clarity** – employees must understand the performance measurement scheme.
2. **>Motivation** – bonuses should motivate staff to achieve the targets.
3. **Controllability** – managers' performance evaluations should only measure factors they control.

3. Performance Measurement for Not-for-profit

Organisation

3.1 Not-for-profit Organisation

Most, but not all, public sector organisations do not have profit as their primary objective and were established in order to provide “public goods”. Their objectives may include usage maximisation and generating satisfaction from those benefiting from the services provided.

Objectives of NFP organisations are more difficult to measure and rank because:

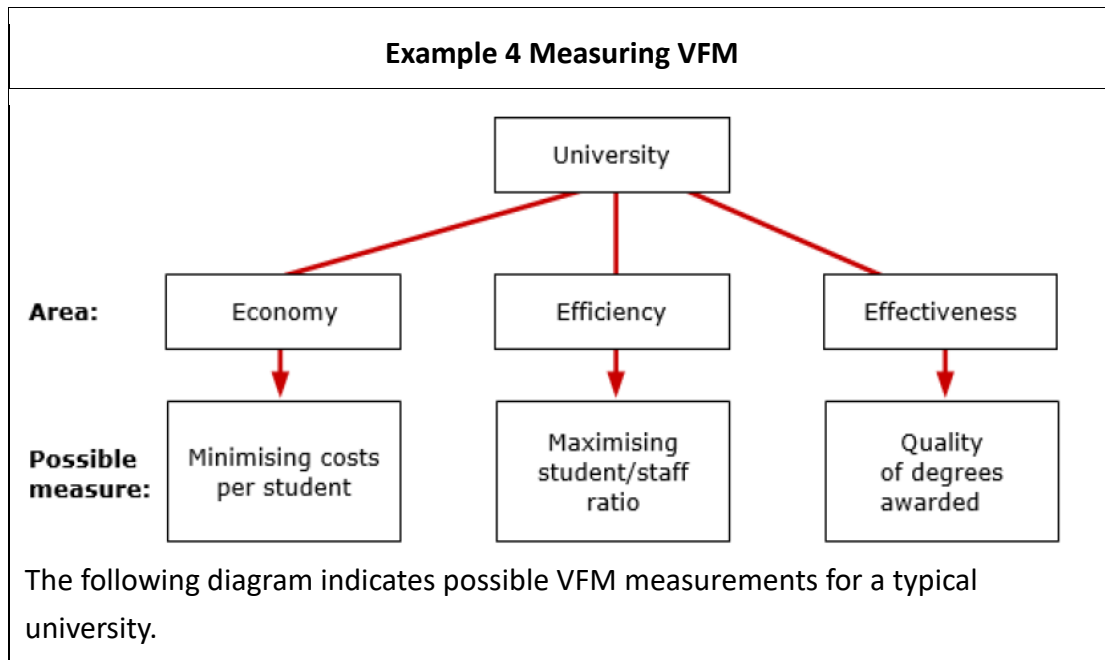
- The objectives are **difficult to quantify**.
- The achievement of some objectives may be simpler to measure than others. There is therefore a **risk that the organisation will focus on what can be easily measured** rather than what is most important to its long-term future.
- **Achievement** of some objectives **may be subjective**.
- Many non-profit bodies have multiple stakeholders, each with potentially **conflicting objectives**.

3.2 Value for Money Objectives

The value for money (VFM) framework attempts to evaluate performance of NFP and other non-commercial organisations. VFM focuses on how well the organisation has achieved its objectives given the funding it received.

Three performance indicators (the “3Es”) measure VFM:

- Economy – **minimising inputs in terms of lowest cost for** the quality required
- Efficiency – maximising **the output/input ratio**;
- Effectiveness – achievement **of objectives**.



4.External Factor

Organisations do not exist in a vacuum, so performance measurement needs to consider external as well as internal factors.

4.1 Stakeholders

A stakeholder is defined as any person or group affected by an organisation. Ignoring stakeholder objectives may result in adverse implications for an organisation.

Management needs to consider who are the most important stakeholders; consider what their objectives are; and identify ways to measure how these objectives are being met.

Example 5 Stakeholder Groups	
The following are the most common stakeholder groups and the aspects of the organisation's performance that are important to them and which the organisation may wish to measure:	
Group	Objectives

Example 5 Stakeholder Groups	
Employees	Satisfactory remuneration Good working conditions
Customers	Good-quality products
Suppliers	Long-term relationships Pay within agreed terms
General public	Employment opportunities Economic effect on region Environmental impact
Government	Compliance with law (e.g. environment)

4.2 Market Conditions and Competitors

Performance evaluations should consider factors that management could not control, in summary:

- Performance evaluation should measure actual results against budgets revised to take account of factors not originally considered.
- Standards can be revised to take into account changes in the environment. For example, the sales volume variance can be split into a market size and a market share variance.
- Performance can be measured not only against internal targets, but benchmarked against competitors or organisations adopting best practice in specific business areas.

4.3 Sustainability

Since the 1990s, there has been increasing recognition amongst all stakeholders of the importance of sustainability and the effects of organisations on society and the environment. To ignore the environment within which organisations operate is not a sustainable approach.

In addition to the overall importance of sustainability, there may also be a direct link between environmental behaviour and performance.

There are numerous ways in which poor environmental behaviour may damage an organisation:

- Fines (e.g. for pollution or other breaches of regulations);
- Increased liability to environmental taxes (e.g. carbon taxes);
- Reputational damage;
- Loss of sales or consumer boycotts;
- Inability to secure finance;
- Loss of insurance cover.

Chapter 17: Divisional Performance Evaluation

企业发展到一定规模必须分权管理，为了方便权力下放，企业需要确定不同的责任中心，那么不同的责任中心如何进行业绩评估呢？我们需要重点了解投资中心业绩评估的两种指标投资回报率和剩余收益。

Learning outcomes

- Explain the meaning of, and calculate, Return on Investment (ROI) and Residual Income (RI), and discuss their shortcomings.
- d) Compare divisional performance and recognise the problems of doing so.

1. Decentralisation

Decentralisation – delegation of authority to make decisions.

All organisations decentralise to some degree; some more than others. Decentralisation is a necessary response to the increasing size of an organisation and the complexity of the environment in which it operates. Even in a small company, one person cannot make all decisions; therefore, senior managers delegate decision-making responsibility to subordinates.

1.1 Advantage and disadvantage of decentralisation

Advantage

- Decisions made more quickly.
- Senior management can concentrate on strategy
- Faster decision making
- Better decision making
- Motivation
- Training and career progression

Disadvantages

- Lack of goal congruence
- Lost economies of scale
- Loss of central control

1.2 Responsibility accounting

Decentralisation requires the creation of autonomous business units or divisions to align responsibility with decentralised authority. These units can be:

- Revenue centres – managers are responsible for decisions about revenue generation (usually including selling costs);
- Cost centres – managers are responsible for decisions about costs;
- Profit centres – managers are responsible for decisions about costs and revenues; and
- Investment centres – managers are responsible for decisions about cost and revenues and investments in assets.

Responsibility structure	Manager's area of responsibility	Typical financial performance measures
Cost centre	Decisions over costs	Standard costing variances
Revenue centre	Revenues only	Revenues
Profit centre	Divisions over costs and revenues	Controllable profit
Investment centre	Divisions over costs , revenues and assets	Return on investment (ROI) Residual income (RI)

2. performance measurement for investment centre

2.1 Return on investment (ROI)

2.1.1 Formula

Return on investment (ROI) shows how much profit has been made in relation to the amount of capital invested and is calculated as (profit/capital employed) × 100%.

$$ROI = \frac{PBIT}{capital\ employed} \times 100\%$$

Capital employed = equity + non-current liability
 = total assets - current liability
 = net current assets + non current assets
 = working capital + non current assets

Example 1:

Division A is an investment centre. It has reported profit of \$35000, Non-current assets at net book value of \$210,000 inventory of \$30000 and trade receivables of \$40000. It has trade payable of \$8000.

Calculate the ROI for this division.

Solution:

Capital employed

= total assets - current liability

= non current assets + current assets - current liability

= 210,000 + 30,000 + 40,000 - 8,000 = \$272,000

$$\begin{aligned}\text{ROI} &= \frac{\text{Controllable profit}}{\text{Capital employed}} \times 100\% \\ &= 35,000 / 272,000 \times 100\% = 12.87\%\end{aligned}$$

2.1.2 Advantages and disadvantages of ROI

Advantages of ROI:

- As a relative measure, it is easy to compare divisions.
- Similar to ROCE used externally by analysts.
- Focuses attention on scarce capital resources.
- Encourages reduction in non-essential investment by:
 - ✧ selling off unused non-current assets; and
 - ✧ minimising the investment in working capital.
- Easily understood percentages (especially by non-financial managers).
- Can be further analysed (i.e. between profit margin and asset turnover).

Disadvantages of ROI:

- Risk of dysfunctional decision making (Activity 1).
- Definition of capital employed is subjective. For example, should non-current assets be valued using:
 - ✧ carrying amount (i.e. net book value);
 - ✧ historical cost; or
 - ✧ replacement cost?
- If net book value is used, ROI will become inflated over time because of depreciation. This may encourage managers to defer asset replacement.
- Risk of window-dressing; inflating reported ROI by:
 - ✧ under investing; and/or
 - ✧ cutting discretionary costs (particularly if ROI is linked to bonus systems).

2.2 Residual income (RI)

Residual income is a measure of the center's profits after deducting a notional or imputed interest cost.

2.2.1 Formula

RI = PBIT – imputed interest on capital

Imputed interest = capital employed × cost of capital

2.2.3 Advantages and disadvantages of RI

Advantages of RI:

- It overcomes the dysfunctional behaviour by ROI. It encourages investment center managers to make new investments as long as it increases RI.
- It can be linked to net present value.
- A risk-adjusted cost of capital can be used to reflect different risk positions of different divisions.

Disadvantages of RI:

- It does not provide the facility to compare divisions' performance because RI is driven by the size of divisions.
- Definition of capital employed
- Effect of depreciation
- Window dressing

Example 2: ROI versus residual income

Suppose that Department H has the following profit, assets employed and an imputed interest charge of 12% on operating assets.

	\$	\$
Operating profit	30,000	
Operating assets		100,000
Imputed interest (12%)	<u>12,000</u>	
Return on investment		30%
Residual income	<u>18,000</u>	

Suppose now that an additional investment of \$10,000 is proposed, which will increase operating income in Department H by \$1,400. The effect of the investment would be:

	\$	\$
Total operating income	31,400	
Total operating assets		110,000
Imputed interest (12%)	<u>(13,200)</u>	

Return on investment		28.5%
Residual income	<u>18,200</u>	

Department H manager would **resist the new investment if they were to be judged on ROI**, but would **welcome the investment if they were judged according to RI**, since there would be a marginal increase of \$200 in residual income from the investment, but a fall of 1.5% in ROI.

Example 3:

Suppose that a company has two investment centers, A and B, which show results for the year as follows. cost of capital is 10%

	A	B
	\$	\$
Profit	60,000	30,000
Capital employed	400,000	120,000
ROI	15%	25%
RI	2,000	1,800

Investment centre A has made double the profits of investment centre B and in terms of profits alone has therefore been more 'successful'. However, B has achieved its profits with a much lower capital investment and so has earned a much higher ROI. This suggests that B has been a more successful investment than A.

2.3 Controllable and Traceable Profit

Controllable profit is used to assess the *manager's* performance.

Traceable profit is used to assess the *division's* performance.

	\$	\$	
External sales			x
Internal sales			x
			x
Variable costs		x	
	<i>Controllable by manager</i>		
Fixed costs		x	
			(x)
Controllable divisional profit			x

	\$	\$
Divisional costs outside manager's control		(x)
Allocated head-office costs		<u>(x)</u>
Traceable divisional profit		<u>x</u>

Chapter 18: Transfer Pricing

为了保证企业利益最大化，也为了各个投资中心公平的进行业绩评估，当种子中心相互买卖商品或提供服务时，应该怎么定价呢？

Learning outcomes

- Explain and illustrate the basis for setting a transfer price using variable cost, full cost and the principles behind allowing for intermediate markets.
- Explain how transfer prices can distort the performance assessment of divisions and decisions made.

1. Transfer price

A transfer price is the price at which goods or services are transferred from one department to another, or from one member of a group to another.

1.1 The goals of a transfer pricing system

- (a) Goal congruence
- (b) Equitable performance measurement
- (c) Retained divisional autonomy

If there is conflict between two objectives of a transfer pricing system, goal congruence must take priority

1.2 Economic Transfer Price Rule

The **limits within which transfer prices should fall** are as follows.

The minimum. The sum of the supplying division's marginal cost and opportunity cost of the item transferred.

- With spare capacity -The opportunity cost is zero
- With full capacity -The opportunity cost is usually the lost contribution from external sales

The maximum. The **maximum** transfer price acceptable to the buying division will be the lower of:

- The external market price (if an external market exists); or
- The net revenue of the buying division.

Example 1

In a company with a divisionalised structure, Division A transfers its output to Division B. Division A produces just one item, Component X. Division B makes and sells an end product that requires one unit of Component X.

	\$ per unit of X
Marginal cost of production in Division A	8
Fixed overhead cost of production	3
Market price in the external market	16
Division B contribution from further processing Component X, before deducting the transfer cost	25

Division A is not working at full capacity, and can meet in full the external market demand and the demand from Division B for internal transfers.

What should be the minimum transfer price per unit and the maximum transfer price per unit for Component X in this situation?

minimum transfer price\$

maximum transfer price\$

Answer: minimum transfer price 8,maximum transfer price 16

1.3 The use of market price as a basis for transfer prices

A market price may be used if buying and selling divisions can buy/sell *externally* at market price.

Transfer price = market price -cost saving in packaging and delivery

1.3.1The merits of market value transfer prices

- Optimal for goal congruence if the selling division is at full capacity.
- Encourages efficiency – the supplying division must compete with external competition.

1.3.2 The disadvantages of market value transfer prices

- Only possible if a perfectly competitive external market exists.
- Market prices may fluctuate.

1.4 Cost-based approaches to transfer pricing

Cost-based approaches to transfer pricing are often used in practice, because in practice the following conditions are common.

- (a) There is **no external market** for the product that is being transferred.
- (b) Alternatively, although there is an external market, it is an **imperfect** one .

Two types of cost based approach

- Full cost pricing
- Marginal cost pricing

1.5 An Intervention

Dual pricing is sometimes used in situations where there is no transfer price that would be acceptable to both the buying division and the selling division, so in the absence of intervention by the head office, the two divisions would not trade with each other.

The head office may wish both divisions to trade for non-financial reasons and may therefore use a system of dual pricing to encourage them to do so.

Dual pricing works as follows:

- A higher price is used when calculating the revenue of the selling division for goods supplied to the buying division.
- A lower price is used when calculating the costs in the buying division for the goods supplied to it by the selling division.
- The head office absorbs the difference between the two as a head office overhead.