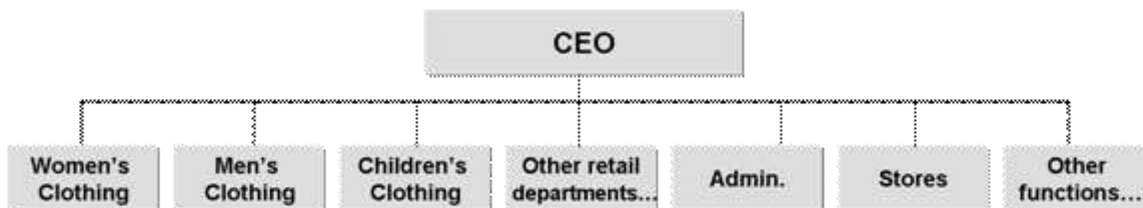
Chapter 13 Solutions

Question 13.1

Distinguish between functional and decentralised organisational structures

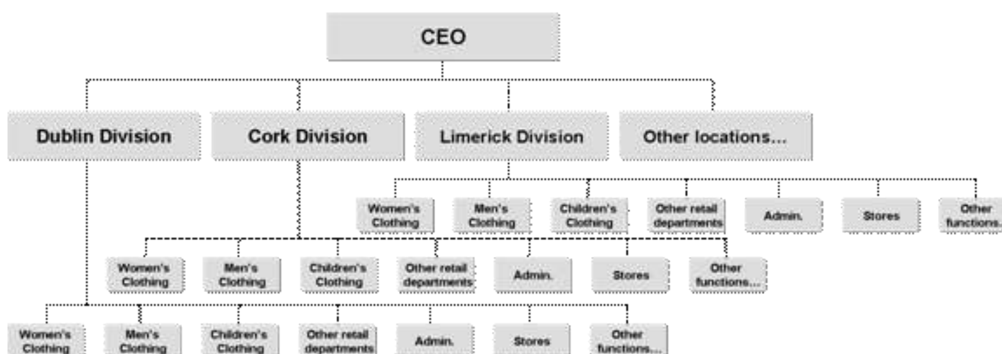
A **functional organisation structure** is where a business is divided into separate departments such as operations and purchasing along with separate support departments such as administration, accounting, marketing and sales. The managers of each department are only responsible for their part in the process of ensuring the provision and sale of a product or service. For example, a purchasing manager is responsible for ensuring the raw materials or products purchased are of good quality and meet the required specifications for the best possible price. Marketing and sales managers are responsible for total sales revenue and the costs associated with selling. The revenues from the marketing department and the costs from the other departments (cost centres) are combined only at managing director or CEO level. This would occur where a company produces a similar type of product or service in the same location. The following is an example of a functional organisation structure relating to the retail sector

Functional Organisation Structure



A **divisionalised or decentralised organisation structure** occurs where the organisation is broken into divisions in accordance with the products or services offered. Each divisional manager is responsible for all the operations relating to their particular product or service. Thus the autonomy experienced at CEO level in a functional organisation is similar to that experienced by a divisional head in a decentralised organisation structure. An example would be a large hotel chain where the general manager heading up each hotel has decision-making responsibility over costs and revenues and an input into investment decisions. Decentralisation is the delegation of decision-making responsibility and is a necessary response to the increasing complexity of the business environment that organisations face and the increasing size of many organisations. Today it is impossible for one person to make all the decisions involved in the operation of even a small company, hence senior managers delegate decision-making responsibility to subordinates. The following is an example of a divisionalised organization structure relating to the retail sector

Divisionalised Organisation Structure



Distinguish between cost centres, profit centres and investment centres from a management accounting

perspective

A **cost centre** is where the manager of such a centre or division is responsible for the costs associated with that centre and hence the main focus is cost minimisation. This level of decentralisation occurs normally in functional organisation types. From a management accounting perspective where performance measurement is crucial, key performance appraisal measures used would be cost variances from budget as well as the trends in cost ratios such as labour as a percentage of total costs.

A **profit centre** is where the manager of such a centre or division has responsibility for both revenue and costs for the assets assigned to the division. Thus performance is measured in terms of the difference between the revenues and costs that relate to a profit centre. A profit centre is like a separate company with its own profit and loss account and the manager's decisions relate to the revenue and costs that make up the divisions profit statement. From a management accounting perspective, key performance appraisal measures used would be cost and revenue variances to budget, as well as the preparation of key profit ratios such as gross profit percentage, operating profit percentage and expenses to sales percentages. Divisional profit statements are commonly used in profit centres and mainly distinguish between costs that are controlled by the division and costs that are controlled by head-office.

An **investment centre** is where the manager has responsibility for not just the revenues and costs relating to the centre, but also the assets that generate these costs and revenues and the investment decisions relating to disposal and acquisition of assets. For managers of investment centres, the main performance measures used will be based on return on investment and breaking that down into its two component parts namely operating profit margin and capital employed turnover (asset turnover). Two measures of divisional performance most commonly used are; return on investment (ROI) and residual income.

The managers of the Athlone division of 'Looking Good plc', a retail chain dealing in cosmetic products, has decision-making authority over selling price and has responsibility for controlling costs. Decisions on fixed asset acquisitions and disposals are made at head-office. Is the Athlone division a profit centre, a cost centre or an investment centre?

The Athlone division would be would be considered a profit centre as management have decision-making authority over revenues and costs. It does not have this authority over fixed asset acquisitions and disposals and thus would not be considered an investment centre.

Solution 13.2

Compare and contrast the return on investment and residual income measures of divisional performance

Return on investment (ROI) is very similar to return on capital employed (ROCE) except the focus is on controllable and traceable revenues, expenses and assets. It measures the return on the investment in assets for a business or division. The following formula is used:

$$\frac{\textit{Divisional net profit}}{\textit{Divisional net assets}} \times 100$$

Residual income is another measure of performance based on the investment in assets. It compares the profit actually earned to the minimum level of profit required for the business. It is profit earned less interest or minimum return on the capital that has been employed to genera the profit. The residual income formula is:

Divisional net profit less an imputed interest charge on divisional investment

The following example illustrates their calculation

The Millenium Cinema Group opened a new division in Limerick . The investment in the Limerick division amounted to €5m and profit of €900,000 was generated in the first year of trading. The weighted average cost of capital for the group is 10 per cent.

The performance of the Limerick division can be measured using return on investment and residual income as follows:

Return on investment	Divisional net profit x 100	€900 x 100 = 18%
	Divisional net assets	€5,000
Residual income	Divisional net profit	€900,000
	Imputed interest (€900,000 x 10%)	(€90,000)
	Residual income	€810,000

Return on investment is a common measure in performance evaluation. Its main advantages are that it is a financial accounting measure that is understandable to managers and can be analysed into its component parts (asset turnover and operating profit margin and as it is a common measure it is ideal for comparison across corporate divisions for companies of similar size and in similar sectors.

On the other hand residual income is considered a better overall performance measure as

it is an absolute measure. In other words it measure in terms of money rather than as a percentage. However the main drawbacks associated with using residual income is that it can be difficult to calculate the minimum required return or cost of capital for a business and ultimately the measure is not as well understood and known by managers as return on investment.

Outline three reasons why return on investment may be an unreliable measure of divisional performance

- The level of investment or capital employed can be difficult to measure and this can distort inter-firm comparisons. For example, comparing ROI for hotels that periodically revalue their property assets to those that don't, can be misleading. The companies with the revalued properties will have a higher asset base and hence a lower return on investment. If assets are valued at net book value, ROI and residual income figures generally improve as assets get older. This can encourage managers to retain outdated plant and machinery.
- Different accounting policies will affect both profits and asset or investment values. Thus inter-firm comparisons can be very misleading if the companies involved do not have similar accounting policies with regard to fixed assets, stocks and certain intangible assets such as research and development.
- The use of ROI can lead to dysfunctional decisions made by managers as it is expressed as a percentage rather than as an absolute measure as in residual income.

Solution 13.3

Outline what you understand by the term 'transfer pricing' and explain how the existence of transfer pricing can distort performance appraisal within a divisionalised organisation structure

Transfer pricing occurs where an organisation structures itself into separate independent divisions. When separate divisions within the organisation buy and sell to and from one another, then transfer pricing occurs. The transfer price is the cost of buying the product in the buying division and is the sales revenue for the selling division. The level of the transfer price will affect the profitability of both divisions and thus has performance appraisal implications. For example, should the selling division set a high transfer price then its profits will increase, but the profits of the buying division will decrease. Thus some agreed price must be found that is fair to both divisions.

The alternatives are:

1. Set full cost price as the transfer price. This however is very harsh on the selling division and undermines its profitability and hence its performance appraisal.
2. Set cost plus a mark-up as the transfer price. This system would help ensure the selling division has some element of profit on the transaction.
3. Set market price as the transfer price. This is a feasible option where prices would be set, based on listed prices of identical products or services, or, on a price a competitor is quoting.
4. Set a transfer price based on negotiation between the managers of the buying and selling divisions. This option often has behavioural benefits, as managers develop an understanding of each others problems.

Transfer pricing is important as the transfer price affects both the buying and selling divisions profits. If unrealistic transfer pricing exists within an organisation, it can result in divisions reporting misleading profits, which can have negative motivational consequences.

Solution 13.4

a) Prepare a divisional performance statement for the Mayo division

		€	€
		€(‘000)	€(‘000)
Total sales revenue			**350**
Controllable divisional variable costs		(55 +71)	(126)
Controllable divisional fixed costs		(100x 80%)	(80)
Controllable depreciation		(50 x 30%)	(15)
			(221)
Controllable divisional profit			**129**
Other traceable fixed costs		(100 x 20%)	(20)
Other traceable fixed costs (depreciation)		50x070%	(35)
			55
Divisional profit			**74**
Apportioned head office cost			(40)
Net profit			**34**

b) Outline what financial measures can be used to evaluate divisional performance.

Financial measures used to evaluate divisional performance will differ depending on the responsibility structure of the organisation and the level of decentralisation of responsibility and authority. The following table show typical financial performance measure relating to the four typical responsibility centres found in divisionalised organisations

Responsibility structure	Manager's area of responsibility	Typical financial performance measure
Cost centre	Decisions over costs	Standard costing variances as well as key costs percentage such as a labour costs as a percentage of total cost.
Revenue centre	Decisions over sales and revenue	Sales variances from budget as well as analysis of the sales mix.
Profit centre	Decisions over costs and revenues	Controllable profit focusing on key revenue and expense percentage such as • Labour costs as a percentage of

		sales. • Sales mix percentages • Profit per product line • Profit per employee • Cost per employee
Investment centre	Decisions over costs, revenues and assets	Return on investment and residual income. ROI would also be analysed into its component parts of operating profit margin and capital employed turnover (asset turnover).

Solution 13.5

a) Calculate the return on investment and residual income for each division before incorporating the new projects

	Munster	**Leinster**
ROI		
Operating profit x 100 Capital employed	€400,000 x 100 = 20% €2,000,000	€325,000 x 100 = 30.4% €1070,000
Residual Income		
	€400,000- (12% x €2,000,000)	€325,000 – (12% x €1070,000)
	€400,000 - €240,000	€325,000 - €128,400
	€160,000	€196,600

b) Calculate the return on investment and residual income for each division after incorporating the new projects into the respective budgets

	Munster	**Leinster**
New operating profit	€400,000 + (€100,000 x 15%) – €8000) = €407,000	€325,000 + €10,000 = €335,000
New Capital employed	€2,000,000 + €50,000 = €2050,000	€1,070,000 + €100,000 = €1,170,000
ROI		
Operating_profit x 100 Capital employed	€407,000 x 100 = 19.85% €2,050,000	€335,000 x 100 = 28.63% €1170,000
Residual Income	€407,000 - (12% x €2,050,000) €407,000 - €246,000 €161,000	€335,000 - (12% x €1170,000) €335,000 - €140,400 €194,600

c) Based on the calculations in (a) and (b), discuss the extent to which the ROI and residual income financial performance measures encourage divisional managers to pursue a corporate profit objective

From the data it is clear that the new project for Munster is acceptable to the company as it offers a rate of return of 14% (7,000/50,000), which is greater than the cost of capital of 12%. However by taking on

this project Munsters divisional ROI falls from 20% to 19.85%. This could lead to the Munster division rejecting the project. If the company's cost of capital is 12% then Munster should take on this new project whereas Leinster should reject its project as it offer an ROI of 10% (10,000/100,000), 2% below the cost of capital. This is also very clear when focusing on residual income as the residual income figure taking into account the proposed projects for Munster increases by €1,000 whereas it decreases by €2,000 for Leinster . However things are not so clear using ROI appraisal measure. Based on this measure alone, management at Munster could reject the project as it reduces their ROI. This however would be a dysfunctional decision as the project is good for the company at large because it offers a positive residual income. Thus it would seem that the use of ROI can tempt managers away from the corporate profit objective whereas Residual income being an absolute measure should guide management to pursue a greater corporate profit objective.

Solution 13.6

a) Prepare the key operating ratios for both hotels

	Galway		Cork
Contribution to sales (512/700 x 100)	**73.14%**	(1095/1593 x 100)	**68.74%**
Operating profit margin (150/700 x 100)	**21.42%**	(255/1593 x 100)	**16%**
Total asset turnover (700/925)	**0.757**	(1593/1350)	**1.18**
ROCE (152/925 x 100)	**16.22%**	(255/1350 x 100)	**18.89%**
ARR (560,000/53 x 365)	**29**	(955000/105 x 365)	**24.91**
Revpar (560,000/100 x 365)	**15.34**	(955,000/150 x 365)	**17.5**
Occupancy (53/100 x 100)	**53%**	(105/150 x 100)	**70%**
%Sales Mix % - Rooms (560/700 x 100)	**80%**	(955/1593 x 100)	**60%**
- Bar (75/700 x 100)	**11%**	(240/1593 x 100	**15%**
- Restaurant (65/700 x 100)	**9%**	(397/1593 x 100)	**25%**
Fixed costs as a % sales (362/700 x 100)	**51.70%**	(840/1593 x 100)	**52.70%**
Residual income (‘000) 150 – (925 x 12%)	**39**	255- (1350 x 12%)	**93**

b) From the information above and the ratios calculated in part (a), justify your opinion as to which hotel is the best performing in the group

Before one can begin to do an inter-firm comparison between divisions or subsidiaries within a group one must point out that Cork , based on the value of net assets, is 50% greater and thus one would expect that turnover and operating profit would also be greater. This is the case with Corks Turnover more than double Galway ’s, and Corks operating profit 70% greater than Galway . However a greater level of analysis is requires to assess which division is more efficient and provides a greater return on the assets invested in the division.

When comparing ROCE and residual income one can see that Cork is providing a greater return for its investors. ROCE is 18.89% compared to Galway ’s 16.22%. These returns are well above the norm for the hotel sector and investors will be happy with the performance of both divisions. However Cork is clearly providing a greater level of return for the shareholders. Residual income measures the excess of profit after a minimum required return is achieved. In this case Cork again out-performs Galway generating a residual income of €93,000 compared to Galway ’s €39,000.

In assessing why Corks ROCE is greater than Galway ’s one must analyse the ROCE into its component parts, namely operating margin and asset turnover.

In this case Galway is achieving a higher operating margin than Cork at 21% compared to 16%. At 16% this is well below the industry average and possible reasons for this include.

- *Cork are generating a lower contribution to sales ratio. Reasons for this include*
    - *A lower ARR compared to Galway . Thus Galway are charging a higher average room rate however this effects their occupancy levels which are low at 53% and thus REVPAR is significantly lower than the ARR.*
    - *Galway ’s rooms sales as a percentage of total sales is higher at 80% compared to Corks 60%. Room sales provide the greater level of profit and thus this boosts Galway ’s profit margins.*
- *Fixed costs as a percentage of sales are slightly higher for Cork than Galway at 52.7% compared to 51.7%.*

In terms of asset turnover and the efficiency of each business to generate sales from their assets Cork clearly outperforms Galway . Corks assets turnover rate is 1.18 compared to Galway ’ s 0.76 times. For every euro invested in the business Cork is €1.18 in sales compared to Galways €0.76. This is a huge

performance by Cork and both Asset turnover rates are well beyond the average for the hotel sector. This is also reflected in the higher occupancy levels achieved by Cork . Possible reasons for this include

1. *Corks hotel is situated in a better location to Galway*
2. *Cork city is bigger and may have had a greater number of festivals and events compared to Galway .*
3. *The lower ARR, which boosted sales for Cork*
4. *Cork are generating greater levels of income and profit from bar and restaurant activities compared to Galway .*

Overall both divisions are performing very well and well above the sector average. Cork is outperforming Galway and it would seem that Galway could develop strategies similar to Cork to maximise their returns for shareholders. Galway could concentrate on the following strategies.

Increasing revenues

1. *Generating more sales and increasing the contribution from the bar and restaurant.*
2. *Focusing on increasing occupancy especially in the off-season by reducing prices and offering specials*
3. *Focus on strategies to retain clients*

Decrease costs

- *Management should take a zero based budgeting approach to controlling costs as fixed costs amount to 52% of sales with variable costs amounting to 26.8%.*

Generating more value from its assets.

Solution 13.7

a) Prepare the key operating ratios for the three hotels

	Dublin	Galway	Cork
Key performance indicators			
Contribution to sales %	74.17%	73.2%	68.76%
Operating profit margin	20%	21.43%	16.%
Total asset turnover	1.26	0.756	1.18
ROCE	25.26%	16.22%	18.89%
ARR	€41	€38	€37
REVPAR	€35	€20.3	€25.9
Occupancy	85.71%	53.33%	70%
Sales Mix - Rooms	75%	80%	60%
- Bar	17%	11%	15%
- Rest	8%	9%	25%
Fixed costs as a % sales	54.2%	51.8%	52.75%
Residual income ('000)	€126	€78	€186

b) Compare and evaluate the operating performances of each hotel

As with any inter-firm comparison one must note that the Cork operation, based on net assets, is 3 times the size of Dublin and 50% greater than Galway . Thus it is no surprise that Cork ’s turnover is 2.5 times Dublin ’s, and double Galway ’s. Corks operating profit is 2.12 times Dublin ’s and 70% greater than Galway ’s. . However a greater level of analysis is requires to assess which division is more efficient and provides a greater return on the assets invested in the division.

When comparing ROCE and residual income one can see that Dublin is providing a greater return for its investors. ROCE is 25.26% compared to Galway ’s 16.22% and Corks 18.89%. These returns are well above the norm for the hotel sector and investors will be happy with the performance of all the divisions. However Dublin is clearly providing a greater level of return for the shareholders. Residual income measures the excess of profit after a minimum required return is achieved. In this case Cork being the bigger operation out-performs both Dublin and Galway generating a residual income of €186,000 compared to Galway ’s €78,000 and Dublin ’s €126,000.

In assessing why Dublin ’s ROCE is greater than Cork and Galway ’s one must analyse the ROCE into its component parts, namely operating margin and asset turnover.

In this case Galway is achieving a higher operating margin than both Dublin and Cork at 21.43% compared to 16% for Cork and 20% for Dublin . In general the sector norm is over 20%, reaching over 30% in boom periods. The main reasons why Corks margins are quite low are as follows.

- Cork are generating a lower contribution to sales ratio at 69% compared to Dublin at 74% and Galway at 73%. Reasons for this include
  - Cork have the lowest ARR at €37 compared to Galway at €38 and Dublin at €41. Thus Galway and Dublin are achieving a higher average room rate however this effects the occupancy levels for Galway which are low at only 53%. Thus for Galway REVPAR is significantly lower than the ARR.
  - Cork ’s rooms sales as a percentage of total sales is a low 60% compared to Galway at 80% and Dublin at 75%. Room sales provide the greater level of profit and thus this boosts contribution and operating margins for both Dublin and Galway .
- Fixed costs as a percentage of sales are slightly higher for Cork than Galway at 52.75% compared

to 51.8%. Dublin however has the highest rate of fixed costs to sales of 54.2%

In terms of asset turnover and the efficiency of each business to generate sales from their assets Dublin at 1.26 times clearly outperforms Galway at 0.76 time sand Cork at 1.18 times. For every euro invested in the Dublin operation, €1.26 is generated in sales. For Cork €1.18 is generated for every euro invested in the business. This is a huge performance by both divisions with both Asset turnover rates are well beyond the average for the hotel sector. This is also reflected in the higher occupancy levels achieved by both Dublin and Cork . Possible reasons for this include

1. Both Dublin and Corks hotels are situated in a better location to Galway
2. Dublin and Cork are bigger cities and may have greater potential to attract clients both business and tourism to their location.
3. Cork will have boosted sales volume through its lower ARR. However Dublin has the highest ARR and also the highest occupancy levels suggesting possibly a lack of competition in their location.

Overall Dublin is the highest performing division achieving very high asset turnover rates, reasonable operating margins and thus an excellent return on investment of 25.3%. Cork is the next best operating division with lower operating margins but and slightly lower asset turnover rates than Dublin . The overall return on investment for Cork is very good at 19%. Galway is the poor performing division and yet it achieves the highest operating margins of 21.43%. It falls short however in terms of generating sales for the level of assets is has with an asset turnover rate of 0.76 times. In its own right this is a excellent rate of asset turnover however not when comparing to Dublin and Cork . The return on investment for Galway is 16.22% which is very much above average for the sector but not when comparing against Dublin and Cork . Overall Galway should concentrate on develop strategies similar to Dublin and Cork to maximise their returns for shareholders. In particular it should focus on generating more sales value from its assets.

Solution 13.8

a) Explain the advantage of a balanced scorecard approach to divisionalised performance measurement

The balanced scorecard system is based on the belief that managers need a broad range of performance measures in order to manage their business. The balanced scorecard provides a framework that translates the aims and objectives of a business into a series of performance targets that can be measured. Thus performance is measured and the link to strategy ensures that management can see if strategic objectives are being achieved. The balanced scorecard measures a company's performance from four different perspectives; the financial perspective, the customer perspective, the internal business processes perspective and the innovation and learning perspective. The term 'balanced' is used because managerial performance is assessed under all four headings and it implies that each quadrant is of equal importance and deserves equal weighting. This can help senior management evaluate whether lower level managers have improved one area at the expense of another. The balanced scorecard will recognize the improvement in financial performance but will also reveal that this was achieved by sacrificing 'on-time' performance targets. The advantages of the approach can be summarised as:

1. It measures performance in a variety of ways, rather than relying on one figure.
2. Managers are unlikely to be able to distort the performance measure as bad performance is difficult to hide if multiple performance measures are used.
3. It takes a long-term, strategic approach to business performance.
4. Success in the four key areas should lead to the long-term success of the organisation.
5. It is flexible, as what is measured can be changed over time to reflect changing priorities.
6. 'What gets measured gets done'. If managers know they are being appraised on various aspects of performance, they will pay attention to these areas, rather than simply paying 'lip service' to them.

b) Critical success factors for a health and leisure company

BSC perspective	***Critical success factors***	***Performance measures***
Financial	Profitability	Net operating profit
	Budgetary control	Sales achieved or meeting financial targets
Customer	Quality of service	Client satisfaction surveys
	Customer relationship management	Customer retention rate
Internal	Investing in staff	Staff incentive schemes
	Productivity	Ratio of wages to turnover
Innovation & learning	Staff as drivers of innovation	Number of new clients / services offered
	Encouraging staff	Level of multi-skills / new tasks / initiative taken

Solution 13.10

a) Discuss the value of using a balanced scorecard approach to evaluate the performance of the new division
The balanced scorecard system is based on the belief that managers need a broad range of performance measures in order to manage their business. The balanced scorecard would provide the supermarket chain / new division with a framework that translates the aims and objectives of a business into a series of performance targets that can be measured. The balanced scorecard would measure a supermarket's performance from different perspectives; the financial perspective, the customer perspective, the internal business processes perspective and the innovation and learning perspective. The term 'balanced' is used because managerial performance is assessed under all four headings and it implies that each quadrant is of equal importance and deserves equal weighting. This can help senior management evaluate whether lower level managers have improved one area at the expense of another. The balanced scorecard will recognize the improvement in financial performance but will also reveal that this was achieved by sacrificing 'on-time' performance targets. Issues in relation to the new services and logistics would also be highlighted.

b) Suggest two critical success factors and accompanying performance indicators

BSC perspective	***Critical success factors***	***Performance measures***
Financial	Profitability	Gross / net operating profit
	Budgetary control	Sales achieved or meeting financial targets
Customer	Quality of service	Customer satisfaction surveys
	Customer relationship management	Customer retention rate
Internal	Delivery times	Number of deliveries on time
	Route planning	Average kilo per kilometre travelled.
Innovation & learning	Staff as drivers of innovation	Number new delivery areas / clients
	Encouraging staff	Level of multi-skills / new tasks / initiative taken

c) Explain the advantage of a balanced scorecard approach to divisionalised performance measurement
The advantages of the approach can be summarised as:

1. It measures performance in a variety of ways, rather than relying on one figure.
2. Managers are unlikely to be able to distort the performance measure as bad performance is difficult to hide if multiple performance measures are used.
3. It takes a long-term, strategic approach to business performance.
4. Success in the four key areas should lead to the long-term success of the organisation.

5. It is flexible, as what is measured can be changed over time to reflect changing priorities.
6. 'What gets measured gets done'. If managers know they are being appraised on various aspects of performance, they will pay attention to these areas, rather than simply paying 'lip service' to them.

Solution 13.11

a) From the information on last years performance, calculate other appropriate measures or ratios in order to determine which division you consider to be the more profitable. Give your reasons and any qualifications you may have. For this part, ignore all reference to the outside supplier

Approach - In this question one is asked to calculate appropriate financial measures or indicators in evaluating the profitability of each division. The appropriate measures would be

- ROCE
- Operating profit margin
- Capital employed turnover rates (asset turnover rates)
- Residual income

However not all the information is given in the question to calculate these measures and thus one must extrapolate the figures from the data given to calculate the above measures.

Food Production

- Actual profit is given
- The operating profit margin or profit to sales ratio is also given at 10%. From this ratio one can calculate the sales level for each division.
- Once sales are calculated one can calculate level of investment in the division by using the asset turnover rates given in question.
- Once the level of investment is known then ROI can be calculated

Catering

- Sales of €80m is given and an operating profit to sales percentage of 20% is also given thus operating profit is 16m.
- As the ROCE is given at 32% and profit is calculated at €16m the level of investment can be calculated.
- The asset turnover ratio can be simply dividing sales by the level of investment.

		Food Production		**Catering**
Profit		€12m	*20% x €80m*	€16m
Sales	*(€12m/10%)*	€120m		€80 m
Profit margin		10%		20%
Asset turnover		2 times	*(€80m / €50m)*	1.6 times
Level of investment	*(120m / 2)*	€60m	*(€16m / .32)*	€50m
ROI/ROCE	*(12m/60m)*	20%		32%
Residual income	*12 – (60 x 18%)*	€1.2m	*16 – (50 x 18%)*	€7m

The overall return on investment is significantly higher for the catering division at 32% compared to 20% for food production. When one focuses on residual income the catering division has a residual income of €7m for an investment of €50m compared to €1.2m for food production for a level of investment of €60m.For the catering

company it can be seen that it achieves a profit margin of 20% of sales double that of the food production company. However the food production company achieves a greater level of sales for its investment. This is measure by the asset turnover ratio which is 2 times for food production compared to 1.6 times for Catering. Overall the catering company is generating a greater return and even though it generates less sales per euro invested in the division it achieves a higher level of profit on those sales compared to the food production company. One should note that in the calculation of residual income using an 18% cost of capital is applied to both divisions. This implies similar risk characteristics which may not be a reasonable assumption.

b) Briefly examine the implications for each division and the group of the outside suppliers offer. For any numerical illustrations, you should use the figures relating to last year, assuming such a situation would also be repeated in the current year
The food production department achieves €4m profit on its sales to the catering division of €22m. This suggests the relevant costs associated with this supply is €18m. The food production department will not want to lose this business as its ROI will fall to 13.3% (12-4/60). This is below the target 18% return on investment and thus the company would achieve a negative residual income.
For the catering division if they achieve a price of €19m for the supply to an outside supplier ROI will increase to 38% (16+3/50) and RI will increase by €3m to €10m (19m – (50m x 18%)).The division must be careful to ensure the level of service from the outsider si at least equivalent to the inter-company deal.
At present the overall return for the group is 25.5% (12 +16/110) The group will lose €1m if the catering and leisure division goes outside (€19m -€18m) and the overall return for the group will fall to 24.5% (8 + 19/110). Thus the situation might be resolved by the divisions agreeing a price in the range of €19m - €20m.