

Chapter 5 Solutions

Solution 5.1

a) Describe the main factors in classifying costs as either relevant or irrelevant for management decision-making purposes.

The function of decision-making is to select a course of action for the future that is most likely to satisfy the objectives of the business. Relevant costs and benefits for decision-making can simply be explained as those costs and benefits that will be affected by the decision. The main factors to consider in classifying costs as relevant or irrelevant to a decision can be considered under the following four headings:

Historic and sunk costs are costs of a historic nature, which are generally referred to as sunk costs, are incurred as a result of past decisions and are therefore irrelevant to the decision-making process. Sunk costs are historical costs which cannot be changed no matter what future action is taken. Sunk costs are easily identifiable as they will have been paid for, or are owed under a legally binding contract.

Incremental costs and benefits are the changes in future costs and benefits that will occur as a result of a decision. Ultimately if a future cost or revenue is not going to change as a result of a decision, then it is irrelevant to the decision and should be ignored in the decision-making process.

Opportunity costs occur where there are mutually exclusive alternatives from which a business must choose one. An opportunity cost is the cash benefit sacrificed in favour of a particular course of action. It is the highest alternative benefit foregone by choosing a specific course of action. Suppose a business has 3 mutually exclusive options available to it of which the net profits are, option A €100,000, option B €80,000 and option C €60,000. Since only one option can be selected, option A is chosen as it provides the biggest benefit. The opportunity cost associated with this course of action is the benefit foregone by not going with the next best alternative, option B. Opportunity cost is an economic term rather than an accounting term. It does not appear in the trading, profit and loss account as an expense because it represents a lost opportunity rather than an outlay cost. It is used in decision accounting as a means of presenting financial information and assessing the financial implications of a decision. For example, the decision to choose option A is not simply because it offers a profit of €100,000 but because it offers a differential profit of €20,000 in excess of the next best alternative.

Replacement costs are relevant where an item or resource is purchased for a specific purpose other than the opportunity or decision under consideration. If the resource is used for this new opportunity then it will need to be replaced for its original purpose. The question is 'what is the relevant cost for using the resource under the new opportunity?' Is it the historic cost (what was originally paid for the resource), or is it the replacement cost (the cost of replacing the resource, as it was intended for another purpose)? The answer is the replacement cost.

b) Depreciation is a significant element in the calculation of profit. Justify its classification as an irrelevant cost in decision-making.

Depreciation is an expense relating to the purchase of fixed assets. The cost of fixed assets is an expense for a business and thus must appear in the profit and loss account. This is done through depreciation where the cost of the asset is charged against sales over the assets life. This is merely a bookkeeping transaction however as the assets has been purchased and paid for in the past. Thus depreciation is a sunk cost as it is related to the original cost of the asset.

Question 5.2

Briefly explain the following financial terms and indicate their relevance in the context of short-term management decision-making

Sunk costs are costs of a historic nature and are incurred as a result of past decisions and are therefore irrelevant to any decision-making process. Sunk costs are historical costs which cannot be changed no matter what future action is taken. Sunk costs are easily identifiable as they will have been paid for, or are owed under a legally binding contract.

Incremental costs are the changes in future costs and that will occur as a result of a decision. Ultimately if a future cost or revenue is not going to change as a result of a decision, then it is irrelevant to the decision and should be ignored in the decision-making process.

Unavoidable costs are costs that are non incremental and thus will not change as a result of a decision. Hence they are unavoidable and should not be considered in the decision-making process. For example a hotel is considering whether to take on a special offer from a travel agent who wants to pre-book rooms at a special discount price. The unavoidable costs in relation to this decision would be the fixed costs of the hotel as they would be very unlikely to change as a result of the decision. Thus they should be ignored in the decision-making process.

Opportunity costs occur where there are mutually exclusive alternatives from which a business must choose one. An opportunity cost is the cash benefit sacrificed in favour of a particular course of action. It is the highest alternative benefit foregone by choosing a specific course of action. Suppose a business has 3 mutually exclusive options available to it of which the net profits are, option A €100,000, option B €80,000 and option C €60,000. Since only one option can be selected, option A is chosen as it provides the biggest benefit. The opportunity cost associated with this course of action is the benefit foregone by not going with the next best alternative, option B. Opportunity cost is an economic term rather than an accounting term. It does not appear in the trading, profit and loss account as an expense because it represents a lost opportunity rather than an outlay cost. It is used in decision accounting as a means of presenting financial information and assessing the financial implications of a decision. For example, the decision to choose option A is not simply because it offers a profit of €100,000 but because it offers a differential profit of €20,000 in excess of the next best alternative.

Solution 5.3

a) Identify the incremental, sunk and unavoidable costs in the above scenario

Incremental costs = Labour, supervision and materials.

Unavoidable costs = Overhead charge

b) Advise the company as to whether they should continue to manage their own cleaning or contract out the work

This requires comparing the relevant costs and benefits of both options as follows. If the hotel does decide to out-source the work the additional revenues expected as a result of this decision can either be set off against the cost of outsourcing (as done below) or added as an opportunity cost to the cost of the in-house option

	Cost of In House	Cost of Contract
	€	€
Labour	78,500	135,500
Supervision	20,500	
Materials	<u>23,222</u>	
	122,222	
Add Opportunity gain		25,000
	<u>122,222</u>	<u>110,500</u>

Based on the financials the business should go with the out-sourcing option. However management should be mindful of any non-financial factors which could sway the decision. For example factors such as

1. Re-deployment of the existing cleaners.
2. The effect of closure on staff morale.
3. Labour union objections.
4. Quality and reliability of the cleaning contractors.

Question 5.4

Farley Chemist - upgrade of computer system

Option A In-house modification

Programmers (5 x €50,000)	250,000	<i>relevant cost</i>
Technicians rise	4,000	<i>€44,000 sunk cost</i>
New technician	36,000	<i>relevant cost</i>
VHI (on new staff only - 6 x €640)	3,840	<i>existing staff VHI is sunk cost</i>
HR charge	0	<i>sunk cost</i>
Computers (3 x €1,000)	3,000	<i>€900 x 2 is sunk cost</i>
Printer	600	<i>relevant cost</i>
Communications	1,850	<i>relevant cost</i>
Desks	0	<i>sunk cost</i>
Chairs (6 x €150)	900	<i>relevant cost</i>
Technicians tools	180	<i>relevant cost</i>
Consumables	500	<i>relevant cost</i>
Admin. director	<u>0</u>	<i>sunk cost</i>
Incremental cost of Option A	300,870	

Option B Sub-contract

Contract fee	300,000	<i>relevant cost</i>
New employee	56,000	<i>relevant cost</i>
VHI	640	<i>relevant cost</i>
HR charge	0	<i>sunk cost</i>
Computer	0	<i>sunk cost</i>
Printer	600	<i>relevant cost</i>
Desk	0	<i>sunk cost</i>
Chair	150	<i>relevant cost</i>
Modems and coms equipment	3,400	<i>relevant cost</i>
Admin. director	<u>0</u>	<i>sunk cost</i>
Incremental cost of Option B	360,790	

I would advise Farley to adopt Option A from a financial viewpoint it incurs the lowest incremental cost.

Question 5.5

a) Advise management on whether department B should remain open or closed explaining and justifying your view

This question can be approached in two ways:

1. Focus on the incremental costs and revenues relating to the decision to close department B
2. Compare the overall profit of the business running including department B with the overall profit of the business excluding department B.

Either approach should yield the same result.

Taking the first approach the incremental costs and revenues associated with closing department B are as follows

	Dept B
	€'000
Revenues lost	(160)
Less Variable costs saved	<u>100</u>
Contribution lost	(60)
Less Fixed costs saved 30% x 80	<u>24</u>
	(36)
Additional revenues	<u>5</u>
Net profit lost	<u>(31)</u>

The business would be €31,000 worse off if it closed department B

The second approach should give the same result. This requires the calculation of overall profit based on Department B closing. In this approach it is assumed that the non incremental fixed costs of department B are evenly divided between department A and C.

	A	C	Total
	€'000	€'000	€'000
Revenues	320.0	240.0	560.0
Add additional revenue	<u>2.5</u>	<u>2.5</u>	<u>5</u>
	322.5	242.5	565
Less Variable costs	120	140	260
Less Fixed costs 80 + (70% x 80/2)	<u>108</u>	<u>108</u>	<u>216</u>
Total cost	<u>228</u>	<u>248</u>	<u>476</u>
Net profit	<u>94.5</u>	<u>(5.5)</u>	<u>89</u>

By comparing the overall profit including department B of €120,000 with the overall profit excluding department B of €89,000 it can be seen that the business is €31,000 worse off by closing department B

b) Briefly outline the non-quantifiable factors that management should take into account before making a decision.

Non-quantifiable or qualitative factors are best described as factors that cannot be quantified in terms of income and costs. In many respects some of the so called qualitative factors could be quantifiable in terms of their effects on the business but this quantification process would be very expensive and not worth the cost. The nature of qualitative factors in decision-making will almost always vary with the circumstances of the decision under review and the options under consideration. Regarding the above decision to close a department, management should be aware of the following qualitative factors, which should have an influence on the decision.

The effect of closure on existing and potential customers - Management must assess the affects of closure on their customer base. For example, if customers feel goods and service provided by department B will not be available, that could influence their decision to purchase goods and services in the other departments. Ultimately the exclusion of one service from a range because, in financial terms, it is uneconomic to provide and sell, could affect the demand for other services. Services and products sold by firms are often inter-dependant and this should be taken into account in the decision-making process.

The effect on employees and unions - Any decision regarding the closure of a section of a business needs to be accepted by employees and their unions. Bad labour relations caused by decisions that involve such changes can lead to poor morale, inefficiencies and losses.

The reaction of competitors - How competitors will react to any changes should also be taken into account. For example if Home Stores reduced the variety of goods and services offered, this provides an opportunity for competitors to offer such goods and services and thus increasing their market share. Again management need to be mindful of the inter-dependence of products and how competitors will react to increase their market share

The effect on suppliers - Closure decisions will affect suppliers and hence this relationship and their reaction must be taken into account in the decision-making process. Will closure of department B affect other supplies of goods and services. Will the business lose out on quantity discount and what effect will it have on the ability of suppliers to continue to supply the other departments.

Question 5.6

Workings - apportion the head office charge and deduct from the overhead figure.

		Head Office	Total	Specific
Finglas	$500000 \div 2254 \times 920$	€204,082	€280,000	€75,918
Merrion	$500000 \div 2254 \times 736$	€163,265	€220,000	€56,735
Baldoyle	$500000 \div 2254 \times 598$	<u>€132,653</u>	€180,000	<u>€47,437</u>
		€500,000		€180,000

a i) Marginal cost statement - original budget

	Finglas €	Merrion €	Baldoyle €	Total €
Rent receipts	920,000	736,000	598,000	2,254,000
Property upkeep	347,000	273,000	341,000	961,000
Wages and salaries	118,000	102,000	74,000	294,000
Overheads	<u>75,918</u>	<u>56,735</u>	<u>47,347</u>	<u>180,000</u>
Total	540,918	431,735	462,347	1,435,000
'Site' profit	379,082	304,265	135,653	819,000
Head office				<u>500,000</u>
Net profit				319,000

a ii) Marginal cost statement - after closure of Baldoyle

	Finglas €	Merrion €	Total €
Rent receipts	920,000	736,000	1,656,000
Property upkeep	347,000	273,000	620,000
Wages and salaries	118,000	102,000	220,000
Overheads	<u>75,918</u>	<u>56,735</u>	<u>132,653</u>
Total	540,918	431,735	972,653
'Site' profit	379,082	304,265	683,347
Head office			<u>500,000</u>
Net profit			183,347

b) Recommendation

The Baldoyle complex should remain open. It is contributing €135,652 towards head office costs and profits. If it is closed the profit of the organisation will reduce by €135,653 from €319,000 to €183,347.

Question 5.7

a) Identify the sunk, incremental and unavoidable costs in the above scenario

- a. Sunk costs – Original cost of the hotel
- b. Incremental costs – Variable costs
- c. Unavoidable costs – Fixed costs

b) Advise Gerry and Debra whether or not they should take up the offer from the tour company.

In this question the focus must be only on the incremental costs and revenues that occur as a result of a decision to accept or reject the order.

If the business accepts the order the relevant costs and revenues are as follows.

Incremental profit statement

		€
Incremental revenues	2,000 rooms @ €25	50,000
Incremental costs	2,000 rooms @ €20	<u>40,000</u>
Incremental profit		10,000

By accepting the order the business will generate €10,000 extra profit. Gerry and Debra must be mindful of the qualitative factors that may affect this decision such as the dates when the tour operator will require the rooms. If this is during any peak business periods the business may lose out on existing sales. Also management need to be mindful of the fact that based on their normal price they would only need to sell and extra 500 bed-nights (€10,000 / 40-20) to achieve this extra €10,000 profit. This would amount to an occupancy level of 79%. Whether this is likely or not is debatable.

Question 5.8

a) Viability of the proposal

Profit calculation	Sales	€ 2.50
	Variable cost	<u>€ 0.92</u>
	Contribution per unit	€ 1.58
	Total contribution	€ 237,000
	Fixed cost	<u>€ 180,000</u>
	Profit	€ 57,000

Break-even point	<u>180,000</u>	113,924 units	€ 284,810 revenue
	1.58		
Margin of safety		36,076 units	€ 90,190 revenue

The proposal is viable.

b) New proposal

Volume (150,000x 115%)	172,500	
Contribution	€ 1.33	
New contribution	€229,425	
Fixed cost	<u>€180,000</u>	
Profit	€ 49,425	(drop of €7,575)
Break-even point	135,338 units	(increase of 21,414 units)

c) Recommendation

Yes, the fresh bread proposal should be adopted but not with the free cup of tea.

d) Other factors to consider:

- Would the image of the outlet be affected?
- Better service to existing customers or potential to attract new customers?
- Would sales of prebaked bread be affected by the fresh baked bread?
- Are the staff experience enough?
- Can staff cope with the additional work?
- Are there health and safety considerations?
- Are there legal concerns that need to be addressed?

Question 5.9

Staff crèche proposal

Financial Analysis

Revenue	€ 150,000	<i>incremental</i>
Rent	€ 0	<i>sunk cost</i>
Opportunity cost	- € 30,000	<i>profit forgone</i>
Insurance	- € 8,000	<i>incremental cost</i>
Child care workers	- € 50,000	<i>specific cost</i>
Assistants	- € 40,000	<i>specific cost</i>
Overheads	€ 0	<i>sunk cost</i>
Retail park manager	€ 0	<i>sunk cost</i>
Essential materials	- € 2,000	<i>incremental cost</i>
Surplus	€ 20,000	

As the proposal provides a surplus of €20,000 it is financially viable and from a financial viewpoint should be encouraged / adopted.

Question 5.10

Advise management on whether the hotel should remain open or closed during the off-season. You should justify your recommendation

The question can be approached in two ways

1. Calculate the profit of the hotel if it closed during the off-season and compare this to the profit if the company stayed open all year round.
2. Focus on the incremental changes to costs and revenues based on closing the hotel in the off-season and base the decision on whether the incremental benefits exceed the incremental costs

Both approaches are shown below.

	Approach 1		Approach 2
	Open Season only	Open 12 months	Incremental costs and revenues
	€	€	€
Sales	500,365	588,815	88,450
Less variable costs			
COGS	210,153.3	247,302.3	37,149
W & S	93,500	104,700	11,200
Caretakers wages	10,000		-10,000
L H P	7,850	13,528	5,678
R and M	6,670	8,290	1,620
Advertising	2,468	3,924	1,456
Staff meals	6,800	11,100	4,300
Telephone	8,870	11,450	2,580
Sundry expenses	<u>2,500</u>	<u>4,500</u>	<u>2,000</u>
	348,811	404,794	55,983
Contribution	151,554	184,021	32,467

The hotel is €28,467 more profitable due to being open for the full year and thus should remain open for the full period.

Question 5.10

Selling price MDA agreed with the bakery

Establish unit costs

	Per unit
Sales	€ 1.40
Variable cost (€1.40 x 45%)	€ 0.63
Contribution (€1.40 x 55%)	€ 0.77
Fixed cost (€1.40 x 25%)	<u>€ 0.35</u>
Profit (€1.40 x 30%)	€ 0.42

Check capacity to establish the opportunity cost

Current capacity	500,000
Full	625,000
Want	<u>650,000</u>
Short	25,000

Establish contribution per unit

Sales	€ 1.40
Variable cost	<u>€ 0.63</u>
Contribution	€ 0.77

Opportunity cost (25,000 x €0.77) € 19,250

Establish the selling price by including, opportunity cost, additional costs and agreed profit.

Opportunity cost (25,000 loaves x 0.77)	€ 19,250
Extra fixed cost	<u>€ 30,000</u>
Total extra costs	€ 49,250
<i>Total number of units to share these costs</i>	<i>150,000</i>
Extra costs per unit (49,250/150,000)	€ 0.33
Variable costs	€ 0.63
Agreed profit	<u>€ 0.20</u>
Selling price	€ 1.16

Qualitative issues to be considered by a retailer considering 'private label' items

- Will the image of the outlet be affected? as private label can be considered inferior by some customers.
- Will sales of branded items be affected?
- Will staff be able to cope with the strategy on a day to day basis?
- The quality of the products produced by the bakery in the retailers name.
- The reliability of the bakery.
- Will new customers be attracted to the store?

Question 5.12

a) State whether each of the above is relevant or irrelevant to the decision to accept this order.

Materials

The relevant cost for material A is its purchase price of €20,000. Material B is already in stock and thus its original costs is a sunk cost and its irrelevant to the decision. However by using material B we forego the necessity of disposing of this material at a cost of €1,500. This cost saving is relevant to the decision.

Labour costs

The direct labour costs is relevant to the decision. The specialist labour costs of €10,000 is irrelevant as this is provided by in-house staff. However they will need to be replaced and this replacement cost is relevant to the decision. Thus the €13,000 replacement cost of labour is relevant to the decision.

Foreman's salary

The existing salary does not change as a result of the decision and thus it is irrelevant.

Machinery

The original cost and net book value of the machinery is irrelevant to the decision as it is a sunk cost. However as a direct result of using the machinery on the job the business will not be able to sell the machinery and this will result in a reduction in future cash flows of €10,000 (€15,000 - €5,000)

Overheads

These costs are non-incremental and thus are irrelevant to the decision

b) Recommend to the company, based on quantitative information, whether the company should accept this order based on the agreed price of €100,000.

	€	€
Incremental revenue		100,000
Less incremental costs		
Material A	20,000	
Material B (cost saving)	(1,500)	
Direct labour	25,000	
Specialist labour	13,000	
Machinery	10,000	66,500
Incremental profit		33,500

As the project shows a profit the company should accept the order unless there are better opportunities available, or non-quantifiable factors exist, that would indicate otherwise.