Chapter 7 Solutions

Solution 7.1

Expansion of UK pharmacy chain into Irish market - factors to be considered when developing pricing policy

Cost of goods sold: The cost of goods sold is one of the main factors to be taken into account when establishing a selling price and developing pricing policy. Cost of goods sold is the invoice cost of the goods plus, any additional costs in bringing the goods to the point of sale such as, the cost of transporting the goods to the business and import duty. The cost of transporting stock to Ireland or the cost of acquiring Irish manufactured items needs to considered.

The affect of the change on the operating cost structure: If an organisation has high levels of fixed costs compared to variable costs, then the organisation has much scope in setting its selling price at a level that can stimulate demand. The cost structure of the Irish operation needs to be established.

The nature of the product or service: The product range provided in the UK needs to be evaluated for suitablity in the Irish market and pricing of similar Irish products needs to be established.

The competitiveness and structure of the industry: Should any industry be very competitive, then price reductions are the order of the day as companies compete for the market. Thus competitive pricing comes to the fore. The competitiveness of the Irish market needs to be established and considered.

Sensitivity to global issues: The pharmaceutical industry can be affected by global developments in relation to the acceptability of using certain medicines and also the affect of drugs trials and adverse reactions to drugs etc.

Legal and environmental constraints: Government policy and legislation can affect the pricing options available to a business. There have been developments in Ireland in relation to the ability to open new pharmacies in recent times.

Solution 7.2

a) Distinguish between cost plus and contribution margin pricing

Cost plus pricing is a management pricing tool where the pricing decision focuses totally on costs, ensuring that a selling price is set that covers the costs of running the business and will be sufficient to provide a profit. The selling price is arrived at by simply adding to costs a profit percentage to get the selling price. It is based on the following formula:

$$P = C + M\,(C)$$

Where

P = selling price

C = costs

M = percentage mark-up or profit percentage based on cost.

The percentage mark-up will generally be an industry norm and will vary depending on what actual costs (direct costs only or total costs) are taken into account. There are three main approaches to cost plus pricing.

1. Gross margin pricing; This is where cost (C) represents just the materials cost or cost of sales. In this situation the mark-up percentage is quite high as it must be sufficient to cover both direct labour and direct expenses as well as overhead expenses and provide a profit.

2. Direct cost pricing: This is where cost (C) represents the total direct costs. In this situation the mark-up percentage must be sufficient to cover both overhead expenses and provide a profit.

3. Full cost pricing: This is where cost (C) represents total costs of the business. In this situation the mark-up percentage can be quite small as it represents clear profit.

Different business sectors will use different cost based methods. For example, the fast moving consumer goods (FMCG) end of the retail sector tends to use gross margin pricing, whereas other business sectors may use a full costing approach. It all depends on the business sector and the sophistication of the costing system used.

Contribution margin pricing focuses on ensuring that each product or service that a business provides offers a target contribution towards fixed costs and profit. Thus it is important to identify and classify all costs into their fixed and variable components. Contribution margin pricing is based on the premise that prices are set using variable costs as the base and what the market will bear as the ceiling. This ensures that although individual sales may not provide an overall profit, the sum of all sales will provide sufficient contribution to cover fixed costs and provide the required profit. The main focus is on providing a contribution to fixed costs and, should economic conditions and competitive levels be favourable, the contribution can be quite large to ensure the business reaches profitability as early as possible. This method can provide a high discretionary element to price setting and thus can be quite useful for businesses that are sensitive to economic and seasonal factors and have a high fixed cost operating structure, such as hotels and airlines.

b) Outline the major criticisms of cost plus pricing.

- It only focuses on costs and ignores other factors such as the economic environment, competition, and the marketing and sales strategy of the business.

- It also does not take into account the required level of profitability based on the level of investment in the business.

Solution 7.3

a) Distinguish between cost plus pricing and profit oriented pricing

Cost plus pricing is a management pricing tool where the pricing decision focuses totally on costs, ensuring that a selling price is set that covers the costs of running the business and will be sufficient to provide a profit. The selling price is arrived at by simply adding to costs a profit percentage to get the selling price. It is based on the following formula.

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Profit oriented pricing focuses on profit and in particular the required level of profit for the amount of investment in the business. The focus is on the return on investment required of

a business by its investors. The process involves calculating a total sales figure that should achieve a return on investment that will satisfy investors, assuming forecast costs and demand are accurate. The technique is an extension of the cost based and contribution pricing methods with an extra variable, profit or return, as part of the equation. The total estimated sales figure, divided by expected forecast demand will give a selling price which will ensure the required level of profitability for investors, provided costs and demand levels remain as forecast

Profit oriented methods are effectively cost based methods taking into account a required rate of return (profitability and investment). Thus their advantages include those of the cost based method with the added advantages that this method focuses on profit and investment.The main criticisms are, that as with cost based methods, it does not focus on the market, price elasticity of demand, competition and the economic environment and thus is considered quite insular. As with the cost based methods, it is considered a good point to start off in tackling the pricing question.

The American Hotel and Motel Association formalised a profit oriented pricing method for all hotel / motels. This method they called the 'Hubbard formula'. It starts with the required profit after tax on capital invested and then adds back taxation, financing costs and all fixed operating costs until total contribution required to achieve such a profit is calculated. The profit contributions of other revenue producing departments in a hotel such as restaurant, bar and banqueting are deducted from this total contribution, to leave the contribution required from accommodation. Adding on variable costs, a total accommodation sales figure is calculated which, when divided by an expected occupancy level, will give an average selling price. The Hubbard formula employs a process that is ultimately designed to set prices that will yield a specified return on capital for the hotel sector.

b) Explain and give examples of market oriented pricing

In any business sector where the level of competition is intense, most pricing strategies are market driven. This certainly is the case regarding the hospitality, tourism and retail sectors. The following are examples of some market based pricing strategies common to these sectors.

Going rate pricing / competition oriented pricing

This is quite common in the accommodation and travel sectors where price is set close to the level of your main competitor in the market. Competitors pricing quite often has the

most significant influence on the price setting decision. This strategy is often called 'follow the leader' and it is essential that costs and profit are monitored under this strategy.

Perceived value /psychological pricing

This involves charging what, according to your own research, the market will accept based upon the consumers perception of the product. Thus understanding the consumer's perceptions of your product or service can provide information regarding their ceiling in terms of what they are willing to pay. This approach recognises that consumers have a predetermined price range within which they are happy to purchase goods and services. Thus price is set within this range.

Loss leader / decoy pricing

An example of a loss leader would be where supermarkets reduce the price of one product to attract customers who will then buy other products. Examples of decoy pricing would be in the restaurant business where the business has high levels of beef in stock compared to chicken. The focus would be to increase the price of chicken to encourage customers to buy the beef.

Two-part pricing

This would be where some tourism organisations may charge a low basic price to gain access but then charge for additional services once the consumer has the basic product. For example in museums there may be a low or zero charge to gain access to the museum but then an extra charge to gain access to specific exhibitions.

Camouflage pricing

This is where businesses try to ensure that customers cannot compare their prices to competitors. This is done by advertising specific packages which include a number of products or services ensuring the consumer will find it hard to compare prices. For example, in the off-season, hotels can offer two nights B & B plus one evening meal or some ferry companies can charge based on one car while others can charge based on a per person rate.

Solution 7.4

Pricing strategies and tactics suitable for a young designer's retail outlet

Pricing strategies

Going rate pricing / competition oriented pricing: The price is set close to the level of your main competitor in the market. Competitors pricing quite often has the most significant influence on the price setting decision. This strategy is often called 'follow the leader' and it is essential that costs and profit are monitored under this strategy. The young designer may see a direct competitor or perceive their item to be very different from those of rival designers.

Perceived value / psychological pricing: This involves charging what, according to your own research, the market will accept based upon the consumers perception of the product. Thus understanding the consumer's perceptions of your product or service can provide information regarding their ceiling in terms of what they are willing to pay. This approach recognises that consumers have a predetermined price range within which they are happy to purchase goods and services. Thus price is set within this range. This would be suitable for a designer of exclusive items.

Loss leader / decoy pricing: An example of a loss leader would be where supermarkets reduce the price of one product to attract customers who will then buy other products. Examples of decoy pricing would be in the restaurant business where the business has high levels of beef in stock compared to chicken. The focus would be to increase the price of chicken to encourage customers to buy the beef.

Two-part pricing: This would be where a low basic price is charged to gain access but then charge for additional services once the consumer has the basic product. Not likely suitable for the young designer.

Camouflage pricing: This is where businesses try to ensure that customers cannot compare their prices to competitors.

Pricing tactics

Price lining: Setting up a number of distinct prices for a product range. For example Jackets €200, €350 and €500.

Odd / even pricing: Odd pricing uses prices like €9.99 to give impression of lower price (perhaps not advisable for designer items) while even prices are used to give impression that price in not the most important factor (more suitable for designer items).

Multiple unit pricing: Providing discount for two or more items (again may not be suitable for designer items)

Complementary goods: Promotional price for one item may encourage purchase of complementary products at full price.

Fixed / flexible pricing: Designer items should have a fixed price where the price set is the only acceptable price and will not be bargained down. Flexible pricing allows for the expectation that price can be negotiated down or a bargain struck and may affect the image of the designer.

Solution 7.5

a) The appropriate price to charge per holiday if the number of holidays sold and total profit remain the same for the forthcoming year.

In the approach to part (a) of this question one must firstly calculate last years profit figure. This should be presented by way of a marginal costing statement as parts (b), (c), and (d) will require information on fixed costs, variable costs and contribution. Once last years profit is calculated then calculate the forthcoming years fixed and variable costs and by using the CVP formula one can calculate the price to charge that will maintain last years profit.

Calculation of last years profit

Profit Statement

		€	Holidays sold	€
Sales		750	1200	900000
Less variable costs				
	Materials	125		
	Labour	200	1200	
		325	1200	390000
Contribution		425	1200	510000
Less Fixed costs				300,000
				210000

Fixed costs increase by 5%		315,000
Material costs increase by 12.5%	140.6	
Labour costs increase by 9%	218.0	358.6

By using the CVP formula $p = P(x) - a + b(x)$ one can calculate a value for P

$$P(1200) - (315,000 + 358.6 \text{ x } 1200) = 210,000$$
$$1200P = 955320$$
$$P = 796.1$$

The price per holiday that will achieve a profit of €210,000 is €796.10

**b)	The number of holidays which must be sold if the existing selling price and total profit are maintained**

The approach to answer this part of the question is to use the required profit formula

Fixed costs + required profit

Contribution per unit

This will give the number of packages sold to achieve the required profit

315,000 + 210,000 / (750 - 358.62)
315,000 + 210,000 / 391.38
1341 Holidays

**c)	The number of holidays which must be sold to break-even if the price arrived at in a) is used**

The approach to answer this part of the question is to use the break-even formula and divide fixed costs by the contribution per unit.

This will give the number of packages sold to break-even

315,000 / (796.12 - 358.62)
315,000 / 437.5
720 Holidays

d) The appropriate price to charge per holiday if a profit of €300,000 is required and if they succeed in selling 1,400 holidays

By using the CVP formula $p = P(x) - a + b(x)$ one can calculate a value for P

P(1400) - (315,000 + 358.62 x 1400) = 300,000

1400P	1,117,0
=	68
P	
=	798

Solution 7.6

Calculate the final selling price for the tour per person assuming the operator requires a mark-up of 40 per cent and the expected load factor is 90 per cent. You can assume an exchange rate of $1.25 to €1.00.

This question is a cost plus pricing question that requires the calculation of a total costs per person before adding the mark-up of 40%. The solution starts by calculating the total fixed costs and dividing that by the expected number of soccer fans. Variable costs are also calculated to get the total cost per soccer fan.

Fixed costs:				€
Flights	15000 x 3		45000	
Transfers	150 x 3/50 = 9 transfers			
	9 transfers	x $600 x 1/1.25	4320	
			49,320	
No of persons on tour	3x150 x 90%		405	
Fixed costs per person	49,320/405			121.8
Variable costs				
Accommodation	$70x10 nights x 1.0/1.25		560	
Tickets	$150x1.0/1.25		120	
Vouchers	$40 x 1.0/1.25		32	712
				833.8
Mark-up 40%				333.5
Selling price per person				1167.3

Solution 7.7

a) Set an inclusive price per meal (table d'hote) which will meet the owners target return

This question requires the profit oriented approach to pricing and thus the following calculations are required.

1) *Fixed costs*
2) *Required return on capital*
3) *The variable costs. Then question tell us that variable costs excluding food cost amounts to 30% of sales. What is required here is to calculate the average food costs as a percentage of sales and thus the total variable costs.*
4) *Once Variable costs are calculated as a percentage of sales then one can use the CVP required profit formula to get the level of sales required to achieve the required profit.*
5) *Divide the level of sales by the forecast covers to get an average price per cover.*

1) Fixed costs p.a.	Salaries and other overheads			€	468,400
	Annual interest	8%	450,000		36,000
				€	504,400

2) Required profit p.a.		18%	750,000	€	135,000

3. Average Food Cost	Proportion of total sales	x	Food cost	=	Weight aver cost
			%		%
Appetiser	0.12		30		3.6
Soup	0.10		25		2.5
Main course	0.55		40		22.0
Dessert	0.15		30		4.5
Coffee	0.08		5		0.4
	1.00				33.0

Other Variable as % sales	-30.0%
Total variable costs	63.3%
Average contribution to sales %	37.0%

4) Required total sales revenue is:

Fixed costs + Profits	=	504,400	+	135,000	€	1,728,108
Contrib to sales %			0.370			

		Days				
5. Number of covers:	320x	160Cover	x	75%	38,400

Price per five course meal				€	**45.00**

b) Set prices for the individual courses (a la carte) assuming that a la carte prices are higher than table d'hote prices by 30 per cent

The average price for a table d'hote meal is calculated at €45. Thus the average a la carte price for a five course meal should equal €58.50 (€45 x 130%). The €58.5 price is then broken into the proportions that each course makes up of the 5 course meal to give the a la carte price per course.

A la carte prices	Total	x	Proportion of =	Price per
	a la carte		Total sales	course
	€			€
Appetiser	58.50		0.12	**7.02**
Soup	58.50		0.10	**5.85**
Main course	58.50		0.55	**32.18**
Dessert	58.50		0.15	**8.78**
Coffee	58.50		0.08	**4.68**
				58.50

c) What should be the inclusive price per meal if there was a reduction in occupancy to 70 per cent and if the general fixed over head increased by 15 per cent

The approach here is to calculate the revised fixed costs figure and then using the CVP required profit formula calculate the sales level that will achieve the required profit. This figure divided by the new level of activity (covers) will give a new average price per 5 course meal to achieve the required profit.

Original fixed costs			€	504,400
Add: increase in general fixed overheads	15%	180,000		27,000
Revised fixed costs				531,400

Required total sales revenue is:

Fixed costs + Profits	=	531,400	+	135,000	€	1,801,081
Contrib to sales %			37%			

Number of covers:	320	Days x		160	Covers x	70%	35,840

Price per five course meal					€	50.25

d) Briefly explain the limitations of your approach

- The approach can apply only to a single product or mix

- Separating costs into fixed and variable is difficult in practice

- The approach assumes that fixed costs remain the same for different activity levels

- Assumes that variable costs per unit remain the same at all levels of sales

- Depicts relationships which are essentially short-term

Solution 7.8

a) **Calculate the average room rate the hotel should charge to achieve their required return on capital. You may assume a corporation tax rate of 20 per cent and ignore any problems associated with double or single occupancy.**

This question requires the Hubbard approach to the calculation of average room rate. This is calculated by starting with the required return on capital invested. By adding back taxation, finance costs and fixed operating expenses, one arrives at the total contribution required to achieve the return on capital. By deducting the contribution from other revenue producing departments, one arrives at a room's department contribution figure. This figure divided by the forecast number of bed-nights will calculate a contribution per room used. By adding the estimated variable cost per room, an average selling price per room is calculated.

	€	
Net profit to achieve required return (200,000 x 15 per cent)	30,000	80%
Taxation (30,000 x 20 ¸ 80)	7,500	20%
Net profit before tax	37,500	100%
Loan interest (800,000 x 9%)	72,000	
Net operating profit	109,500	
Fixed costs	300,000	
Total contribution	409,500	
Contribution food and bar	80,000	
Room contribution	329,500	
No of bed-nights (30 rooms x 75 per cent occupancy x 360 days)	8,100	
Contribution per room (€329,500 ¸ 8,100 days)	€40.67	
Variable cost per room	€10.00	
Selling price per room	€50.67	

b) **If the double rooms are sold at a premium of €20 above the single rooms, what prices should be charged for each single and double room to achieve the owners required rate of return. You may assume that double occupancy as a percentage of overall occupancy is 60 per cent and there is no change to variable cost per room.**

The approach in this part of the question is to let X = price of a single room. If that is the case the X + €20 = the price of a double room. Total sales is made up of 40% single rooms and 60% double.

Total sales $=$ Single room sales + double room sales

100%	=	40%	60%
8,100	=	3240	4860
410500	=	3240X +	4860 (x + €20)
410500	=	3240X +	4860 x + 97,200
313,300	=	8,100X	
38.68	=	X	

Double rooms = 38.68 + 20   58.67

c) What other considerations would you take into account when looking for strategies to improve room occupancy.

- Level of competition
- Seasonality
- The level of demand
- The state of the local and foreign economies
- The cost structure of the business.
- Local events
- Advertising
- Offering package deals to new and existing customers during off-peak period

Solution 7.9

This question requires the use of the Hubbart approach to pricing starting with the required return and working back-wards to calculate the income from admissions.

Net profit to achieve required return (800,000 x 7 per cent)	56,000	80%
Taxation (56,000 x 20 ¸ 80)	14,000	20%
Net profit before tax	70,000	100%
Loan interest (1,200,000 x 8%)	96,000	
Net operating profit	166,000	
Fixed costs	150,000	
	316,000	
Undistributed operating expenses	300,000	
Total operating profit	616,000	
Other operating profits	320,000	
Direct profit from admissions	296,000	
Direct wildlife feeding and care expenses	100,000	
Admissions	396,000	
Forecast number of visitors	67,500	
Average admission price to achieve required profit	€5.86	

b)   If a family admission fee (two adults and two children) is set at €16, what should the single visitor admission fee need to be in order to achieve the profit target? (Assume 50 per cent of all visitors would be in families of four).

This requires calculating the amount of income generated from sales to families. This figure is then deducted from the total sales to achieve the required profit to get the sales required from single persons. This figure is divided by the number of single persons to get the average price per single person to achieve the required profit.

Total sales required to achieve required return		396000
Sales from family of 4	50% x 67,500	33,750

Income from family of 4	33750/4 x €16	135,000
Thus 33,750 single persons must generate		261,000
Average Price per single person	261000/33750	7.733333

c) **Suggest four other factors which should be taken into account prior to finalising admission prices.**

- Level of competition
- Seasonality
- Level of demand and periods of high and low demand
- State of local and international economies
- Cost structure of the organisation

Solution 7.10

a) Calculate the selling price of a bed-night if the numbers sold and profits earned are to remain the same as last year

The approach to this question requires firstly the calculation of last years profit as well as the fixed and variable costs for this year. Once these are calculated then through the use of the CVP formula *Profit = P(x) - (a + b(x))* one can get a value for P – required selling price

1. Calculate last years profit

<div align="center">Profit</div>

Statement

Sales	(€50 x 5,000)	250,000
Less variable costs (€30 x 5000)		150,000
Total contribution	(€20 x 5,000)	100,000
Less fixed costs		30,000
Net profit		70,000

2. Calculate New cost figures

Variable costs

Food	15.75
Direct labour	11
Variable overhead	6
Total variable costs	32.75
Fixed costs	31,500

Profit = P(x) - (a + b(x))

70,000 = P(5,000) - (31,500 + 32.75 (5,000)

70,000 = 5000P - 195,250

265,250 = 5000P

53.05 =   P

The average price per bed-night required to achieve a profit of €70,000 based on sales of 5000 bed-nights is €53.05

b) The number of bed-nights the university needs to sell to maintain last years profit if they decide that price is to remain unchanged from last year.

Again through the use of the CVP formula *Profit = P(x) - (a + b(x))* one can get a value for X – number of bed-nights sold

$$70,000 = 50(x) - (31,500 + 32.75(x))$$
$$101,500 = 17.25 \ (x)$$
$$5884.06 = \quad X$$

c) Calculate the forecast profit if prices increase by 10 per cent and demand remains the same as last year

The approach here is simply to prepare a profit statement showing the forecast profit based on the above changes

Profit Statement

Sales	€55 X 5,000	275,000
Less variable costs	€32.75 X 5,000	163,750
Contribution	€22.25 x 5,000	111,250
Less fixed costs		31,500
		79,750

Solution 7.11

Outline what you understand by customer profitability analysis and outline the benefits to be achieved for companies undertaking customer profitability analysis

Customer profitability analysis (CPA) focuses on how individual customer or customer groups contribute to profit. It is derived from the Pareto principle that about 20 per cent of customers account for 80 per cent of profit. In the past, management accounting reports concentrated on analysing products and product lines and although this information is essential, increasing attention is now being given to analysing profits by customers. The focus of this analysis is to ensure that the most profitable customers or customer groups receive comparable attention from the organisation.

The process requires the use of an activity based costing system and involves gathering detailed cost and revenue information for each customer or customer group as follows:

a) Sales details: These would include the price charged to the customer including any details on cash and quantity discounts.

b) Cost details: These would involve focusing on the resources consumed by different customers. These cost drivers (the activities that create the customer cost) need to be separately identified and a cost driver rate associated with the activity. Examples of cost drivers under CPA would include order costs, sales visits, delivery costs, special delivery costs, credit collection and non-standard product requirements.

Customer profitability analysis is recognised to have two main advantages:

- By focusing on the most profitable customers and providing an improved or commensurate service, customer relations improve and customer retention increases. Also by identifying the attributes of this group, other similar customers may be attracted to the organisation.
- By having a knowledge of why certain customers or customer groups do not significantly contribute to profit (and may actually reduce profit), management can assess the difficulties and work on solutions that benefit the organisation as well as the customer.