Lifecycle costing

Q2. Fit Co specialises in the manufacture of a small range of hi-tech products for the fitness market. They are currently considering the development of a new type of fitness monitor, which would be the first of its kind in the market. It would take one year to develop, with sales then commencing at the beginning of the second year. The product is expected to have a life cycle of two years, before it is replaced with a technologically superior product. The following cost estimates have been made.

	Year 1	Year 2	Year 3
Units manufactured and sold		100,000	200,000
Research and development costs	$160,000		
Product design costs	$800,000		
Marketing costs	$1,200,000	$1,000,000	$1,750,000
Manufacturing costs:			
Variable cost per unit		$40	$42
Fixed production costs		$650,000	$1,290,000
Distribution costs:			
Variable cost per unit		$4	$4·50
Fixed distribution costs		$120,000	$120,000
Selling costs:			
Variable cost per unit		$3	$3·20
Fixed selling costs		$180,000	$180,000
Administration costs	$200,000	$900,000	$1,500,000

Note: You should ignore the time value of money.

Required:

(a) Calculate the life cycle cost per unit. (6 marks)

(b) After preparing the cost estimates above, the company realises that it has not taken into account the effect of the learning curve on the production process. The variable manufacturing cost per unit above, of $40 in year 2 and $42 in year 3, includes a cost for 0·5 hours of labour. The remainder of the variable manufacturing cost is not driven by labour hours. The year 2 cost per hour for labour is $24 and the year 3 cost is $26 per hour. Subsequently, it has now been estimated that, although the first unit is expected to take 0·5 hours, a learning curve of 95% is expected to occur until the 100th unit has been completed.

Calculate the revised life cycle cost per unit, taking into account the effect of the learning curve.

Note: the value of the learning co-efficient, b, is –0·0740005. (10 marks)

(c) Discuss the benefits of life cycle costing. (4 marks)

(20 marks)

Q3. You are a member of a project team in Kenada Co. The company produces light fittings, and has a reputation for constant design innovation. As a result, its products are seen as highly fashionable, but have a short product market life cycle.
To date, the selling price for new products has been calculated on a cost plus basis, and a market skimming approach to pricing has been applied.
The newly appointed CEO has decided that a target cost approach should be applied to the development and marketing of a new product.
Details of the product are:

(i) A three year product market life cycle is anticipated, with sales volumes estimated to be:
400,000 units in year 1;
450,000 units in year 2; and
380,000 units in year 3.

(ii) Output will be eight units per labour hour in the first year. As staff become more familiar with the production process, it is expected that output per hour will increase by 3% in the second year and a further 2% in the third year.

(iii) Labour is currently charged to products at a rate of $60 per hour. A three-year remuneration package has been negotiated with the workforce. This provides for a 5% increase in year 2 and a further 4% increase in year 3.

(iv) Material costs are estimated to be $9 per unit of output in year 1. As a result of long-term supply contracts with suppliers, these will be reduced by 2% at the beginning of year 2. There will be no further changes.

(v) Variable overheads are charged to products on a labour hours basis at a rate of $80 per hour in year 1. Variable overhead costs are expected to rise by 5% in year 2 and a further 4% in year 3.

(vi) Fixed overheads allocated to the products are estimated at $2,170,000 in year 1, and are expected to increase by 4% in each of the following two years.

(vii) Research has indicated that a selling price of $38·50 per unit for the first two years and $35·50 per unit in the third year will lead to the sales volumes referred to in point (i) being achieved.

(viii) A target profit margin of 20% is required.

Required:
(a) Explain each of the following approaches to pricing:
(i) Cost plus pricing; and
(ii) Target cost pricing. (4 marks)

(b) Using a target cost approach, calculate:
(i) total cost AND cost per unit for each year;
(ii) cost gap per unit for each year; and
(iii) the total cost saving which must be achieved in the three years of the product life cycle.
(16 marks)
(20 marks)

Disclaimer: attempt it after completing ABC, EMA and lifecycle costing

March/June 2019

The following scenario relates to questions 16–20

Volt Co generates and sells electricity. It operates two types of power station: nuclear and wind.
The costs and output of the two types of power station are detailed below:

Nuclear station

A nuclear station can generate 9,000 gigawatts of electricity in each of its 40 years of useful life.
Operating costs are $486m per year. Operating costs include a provision for depreciation of $175m per year to recover the $7,000m cost of building the power station.
Each nuclear station has an estimated decommissioning cost of $12,000m at the end of its life. The decommissioning cost relates to the cost of safely disposing of spent nuclear fuel.

Wind station

A wind station can generate 1,750 gigawatts of electricity per year. It has a life-cycle cost of $55,000 per gigawatt and an average operating cost of $40,000 per gigawatt over its 20-year life.

16 What is the life-cycle cost per gigawatt of the nuclear station (to the nearest $'000)?

A $54,000
B $73,000
C $87,000
D $107,000

17 Which of the following will decrease the total life-cycle cost of a nuclear station?

(1) Increasing the useful life of the station
(2) Reducing the decommissioning cost

A 1 only
B 2 only
C Both 1 and 2
D Neither 1 nor 2

18 How would the disposal cost of spent nuclear fuel be categorised in environmental management accounting (EMA)?

A A prevention cost
B A detection cost
C An internal failure cost
D An external failure cost

19 If Volt Co sets a price to earn an operating margin of 40% over the life of a wind station, what will be the total lifetime profit per station (to the nearest $m)?

A $35m
B $408m
C $560m
D $933m

20 Which of the following are benefits of life-cycle costing for Volt Co?

(1) It facilitates the designing out of costs at the product development stage
(2) It can encourage better control of operating costs over the life cycle
(3) It gives a better understanding of the causes of overhead costs
(4) It provides useful data for short-term decision-making

A 1, 2 and 3
B 1 and 2 only
C 1 and 4
D 2, 3 and 4