

Chapter

10

Relevant costing

10.1 Introduction to relevant costing

A relevant cost is a 'future incremental cash flow', arising as a direct consequence of a decision made.

A relevant cost is for a particular decision and will change if an alternative course of action is taken. Using this approach will simplify the decision making process as it will eliminate redundant data. Relevant costing is one of the best methods of making decisions in the short-term.

Typical examples of where relevant costing is used is in decisions being made as to whether to accept or reject a contract, pricing work that needs to be performed and cost benefit comparisons.

Fixed costs

Expenditure which cannot be economically identified with a specific saleable cost unit.

A cost incurred for an accounting period, that within certain output or turnover limits, tends to be unaffected by fluctuations in the level of activity (output or turnover).

(CIMA)

Indirect overhead or fixed cost is a cost which **cannot be easily identified or related to a cost per unit** or activity of any kind e.g. a cost which remains constant when the production of a good or service within the organisation rises or falls. Examples could include a factory supervisor's salary or factory rent and rates, or other non-production related expenses such as the cost of running the marketing, finance or human resource department.

Fixed cost may also be referred to as a period cost e.g. incurred for an accounting period regardless of sales or production levels. It is a cost that remains constant within certain limits of an activity e.g. production or sales.

Fixed costs generally are not relevant when a decision is made.

Other types of non- relevant cost	Definition	Examples
Sunk or historical	These have already been incurred and cannot be recovered in the future. Every decision should deal with future costs and not historical costs.	Research and development costs, original cost of material or machinery.
Committed	These costs will be incurred in the future irrespective of the decision taken as they are unavoidable. Such costs maybe a legally binding agreement.	Rent agreement on a building.
Notional	These are costs where no actual cash flow has been incurred as a result of the decision. They are simply book entries for accounting purposes.	Depreciation or head office charges.
Common	These costs are identical for all alternatives taken and therefore not relevant to decision making.	The apportioned cost between joint products within processing accounts.

Other types of relevant costs

Directly attributable fixed costs (**or product-specific fixed costs** as opposed to general fixed costs) that is overhead linked to a particular product or division, on the other hand, maybe avoided as a shut-down decision or incurred as a direct consequence of a future decision. Rent may increase if the factory expands its activities, the differential cost would be the extra rent now payable or possibly eliminated if the factory was to be closed.

Opportunity cost also plays a big part in decision-making. This would be the ‘next best alternative foregone by you choosing to make a future decision’. Such an example would include lost contribution because labour or machine time is at full capacity and you have to take some or all of this capacity away, to do another task for the cause of the decision you made, therefore ceasing production of other goods.

Another example would be materials with no further use actually now being used on a decision you have made. You could have sold the material and therefore received scrap proceeds or you could have used the material on the production of other goods thus saving some money for the business. Both would be an example of opportunity cost.

Avoidable costs are those costs that would be saved or avoided as a result of not doing an activity. For example the shutting down of a division or a department may save or avoid labour costs, rental costs, heating and lighting costs provided that these costs can be avoided and are not committed.

Differential or incremental costs are those costs which are the difference between alternative decisions. For example if the relevant cost to employ an English member of parliament (MP) is £1,000 and the relevant cost to employ a Scottish MP is £490 then it can be said that the differential or incremental cost is £510, being the extra cost to employ an English MP.

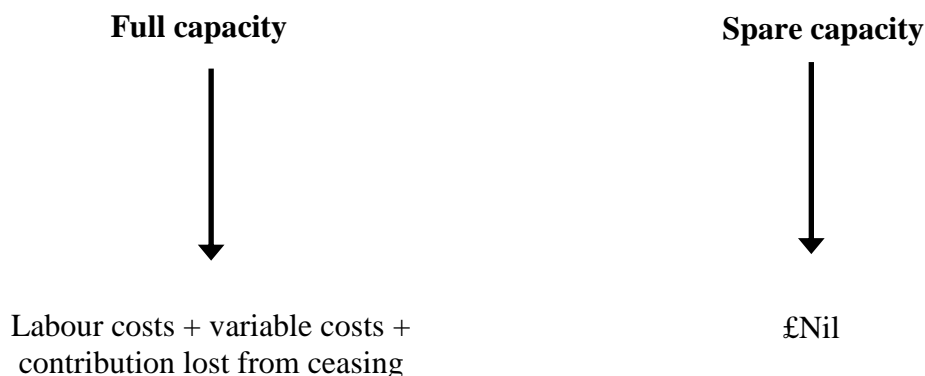
Relevant cost of labour

Labour will either be at full capacity meaning that every individual is participating in a productive activity for the organisation and so there is no one spare to do other new activities, or labour will not be at full capacity meaning that there is spare capacity within the labour force that can be used to carry out new activities.

The relevant cost of labour for a new contract will therefore be dependent on whether the labour force is at full capacity or has spare capacity.

If the **labour force is at full capacity** then the relevant cost will be the opportunity cost of lost contribution from existing production being stopped to carry out the work on the new contract.

If the **labour force had spare capacity** then the relevant cost will be nil as the idle labour force can be used to carry out the work on the new contract as long as there is enough labour to do so, if not then some of the non-idle labour force would have to be used and as a result incurring opportunity cost of lost contribution from existing work.



Generally most labour cost is fixed (the modern thought), therefore paid regardless of whether labour is productive or not. Overtime payments or piecework payment schemes in decisions however can be relevant.

Example 10.1

Lady Gaga Plc is a renowned record manufacturing company and has received a one off order from Ginger Blears an English member of parliament to write and manufacture a song for her about how honourable she is. In addition to demonstrate her selfless efforts to public duty the record should be made from platinum, a more expensive material than the usual material used to manufacture records. Ms Blears is happy to pay for this record out of her expenses claiming it back from the taxpayer.

Currently Lady Gaga Plc's work force is at full capacity and would have to stop work on existing songs in development such as "If you don't know me by now" and "Everything I do, I do it for you" for other trustworthy members of parliament.

The following information is available for the usual manufacture of new songs.

	Per song (£)
Selling price	45,000
Material	(5,000)
Variable overheads	(3,000)
Labour	<u>(2,000)</u>
Contribution	35,000
Fixed overhead	<u>(1,500)</u>
Profit	<u>33,500</u>

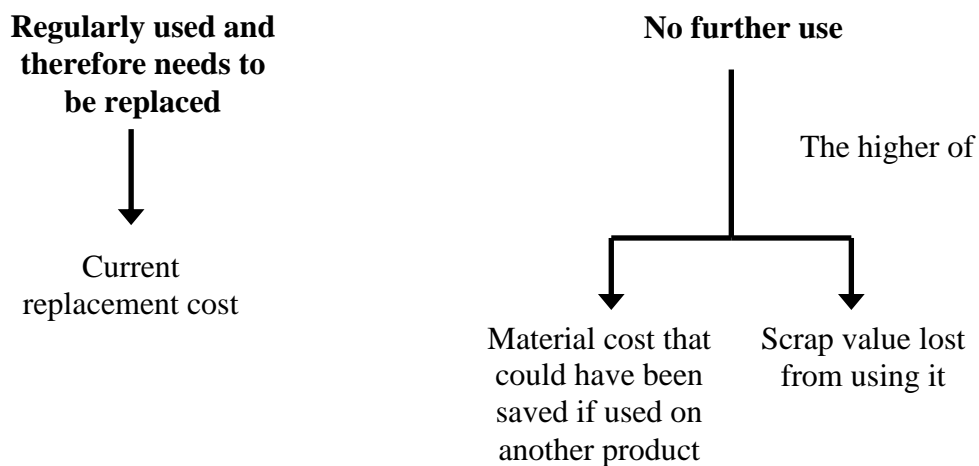
What is the lost contribution suffered by Lady Gaga Plc if it accepted the order from Ginger Blears?

Relevant cost of material

Material will either be regularly used in the production process or it will have no further use.

If it is **regularly used** then it would also need replacing regularly and therefore the relevant cost of material here to use on a new contract would be the **current replacement cost** which tends to be the market price.

If there is **no further use** for the material and it is simply in storage but we could use it on the new contract then we should consider the **scrap value lost** from using it and also if this material could somehow be modified and used on another contract, we should also consider the **material cost saved**. The relevant cost here would be the higher of material cost saved and scrap value.



The historical cost of stock or the stock valuation method, by which a business internally values it, would always be irrelevant to a decision.

Example 10.2 – Worked example (CIMA past exam question)

Z plc is preparing a quotation for a one off contract to manufacture an item for a potential customer. The item is to be made of steel and the contract would require 300 kgs of steel. The steel is in regular use by Z plc and, as a consequence, the company maintains an inventory of this steel and currently has 200 kgs in inventory. The company operates a LIFO basis of inventory valuation and its most recent purchases were as follows:

20 November 2006 150 kgs costing £600
3 November 2006 250 kgs costing £1,100

The steel is easily available in the market where its current purchase price is £4.25 per kg. If the steel currently held in inventory was to be sold it could be sold for £3.50 per kg.

Calculate the relevant cost of the steel to be included in the cost estimate.

The steel needed for the one off contract is regularly used and therefore we use the current purchase price as the relevant cost to value the steel.

Therefore:

$$£4.25 \times 300 \text{ kgs} = £1,275$$

Example 10.3 – (CIMA past exam question)

X plc intends to use relevant costs as the basis of the selling price for a special order: the printing of a brochure. The brochure requires a particular type of paper that is not regularly used by X plc although a limited amount is in X plc's inventory which was left over from a previous job. The cost when X plc bought this paper last year was \$15 per ream and there are 100 reams in inventory. The brochure requires 250 reams. The current market price of the paper is \$26 per ream, and the resale value of the paper in inventory is \$10 per ream.

Calculate the relevant cost of the paper to be used in printing the brochure.

Example 10.4

GLS Plc have 1,000kg of high quality iron ore stock in a warehouse that has been sitting there for well over 4 months a recent quote from a scrap merchant offered about £2,200 for the entire lot about 2 weeks ago. The historical value of stock using a FIFO basis is £5,750.

The iron ore stock could also be used on a current batch of goods GLS are working on which would require the full amount of 1,000kg, but the batch does only need to use a lower quality of iron. This can be smelted down and used for manufacturing water cans, which have the following cost information.

	Per unit (£)
Selling price	15.00
Iron ore (2kg)	(8.00)
Labour	(4.00)
Contribution	3.00
Fixed overhead	(1.00)
Profit	2.00

High quality iron ore can be currently purchased for £4.50 per kg. The £4.00 per kg above is the current market price for cheap iron ore.

A customer in desperate need for this stock rings up GLS and frantically offers £5,000 for the 1,000kg.

Should GLS accept such an offer?

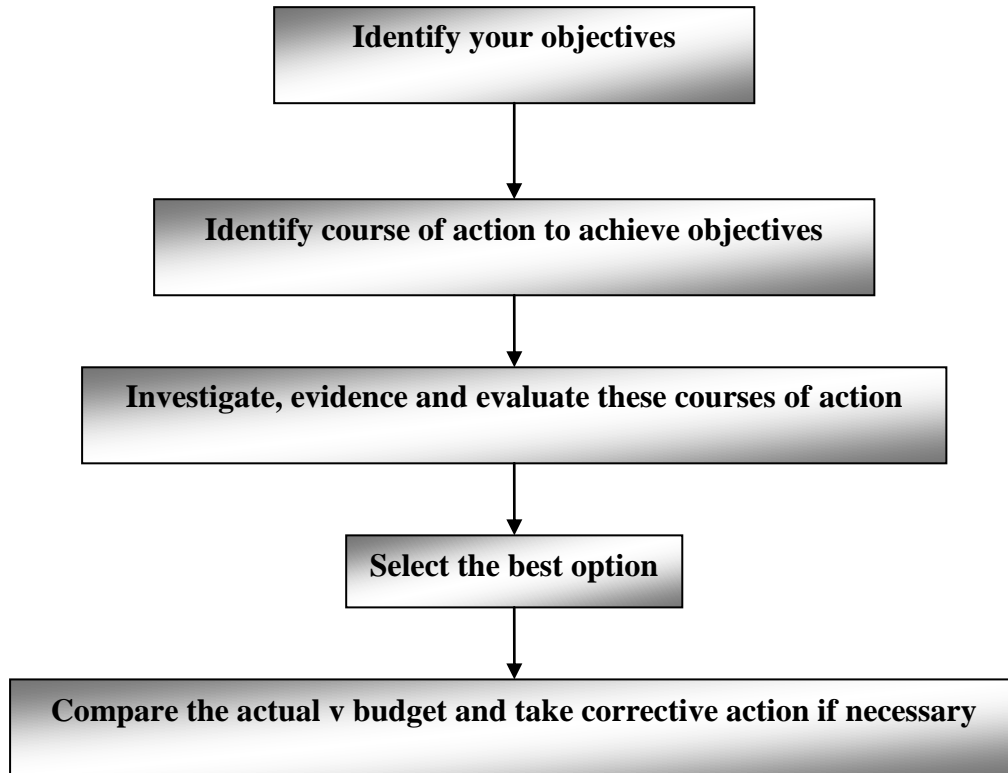
Note: It is not just the financial implications the examiner will require it may be the qualitative factors as well (those factors which cannot be expressed numerically). It is also important to make assumptions in this form of question when information is uncertain.

Qualitative factors include

Factor	Example
Employee	The impact on morale if there are changes made to employee working conditions or hours.
Customer	Customer's reaction to changes in the range of products and services offered.
Supplier	Supplier's reaction to changes in the range of products purchased or the frequency of products purchased.
Competitor	Competitor's reaction to changes made on product range, an advertising campaign or pricing policy.
Timing	Floating a company when the industry and stock exchange is doing well will result in a higher share price for the company.
Inflation	The profit earned on a long term fixed contract may be eroded by inflation.
Environment	Food packaging, fuel and cigarettes have an impact on the environment and must be considered when looking at their manufacturing.
Other opportunity costs	Other production opportunities which can't also be taken because of limited resources such as money, labour or materials.
Legal effects	Planning and building regulations of different countries when building a plant.
Political consequences	Excessive rules and regulations need to be considered as they may make an alternative uneconomical to carry out. Currency quotas restricting the amount of money that can be bought in and out of a country may make it difficult to trade in that country.

10.2 The decision making process

Decisions are necessary when there is uncertainty and an alternative action could be taken. When this is the case the following process should be taken:



Identify your objectives

All organisations require objectives allowing them to serve the purpose they were designed for and so this is why it is the most important step in the decision making process. Objectives are derived from goals. Goals are what the organisation plans or intends to achieve; normally converted to objectives which have measurability and timescale. Objectives are a measurable description of a goal with a clearly defined desired result and timescale to achieve it.

Examples of goals may include maximising shareholder wealth, maximising profits, maximising sales or reducing costs, increasing efficiency, reducing the use of non-sustainable resources, improving the environment, and increase accessibility of essential services for the underprivileged.

Examples of objectives to achieve goals maybe to increase profits before tax by 15% over the next 2 years, cut indirect costs by 10% over the next 12 months, increase sales by 20% over the next 3 years, reducing hospital waiting lists by 30% over the next 10 years and reduce carbon emissions by 80% over the next 4 years.

Identify course of action to achieve objectives

After deciding the objectives we then have to consider the courses of action that can be taken to achieve them. Examples of course of action that can be taken may include launching new products to increase sales and profitability, such as LCD or Plasma TVs, ceasing existing products that maybe making a loss and are out of favour with customers, such as video recorders, redevelopment of existing products which are not so popular, such as the same familiar chocolate bar becoming several new products this being brands like Kit Kat and Mars.

Investigate, evidence and evaluate these courses of action

Organisations cannot usually carry out all courses of action to achieve their objectives because there is simply not enough resources to do this, and so they must select only one course of action.

In this step each course of action is investigated and evaluated on its merits and demerits in achieving the desired objectives. Evidence is collected from both internal sources within the organisation (production capacity and budget costs) and external sources outside the organisation (market share and growth of competition) being both quantitative and qualitative.

Quantitative information is concerned with information that can be easily expressed in the form of numbers e.g. absolute measures, relative percentages, ratios, indices or fractions. Qualitative information is information that cannot be easily expressed in the form of numbers, information that would be hard to quantify e.g. soft opinions, preferences and feelings of customers about the perception of brands or product features offered to them.

There should also be an analysis of the probability of achieving the objectives through each of these courses of action. This would include understanding how realistic the assumptions are in all courses of actions.

Select the best option

This step assesses the courses of action presented and seeks to select the most effective course of action and then implement it. There should be a clear rationale and criteria used in arriving at the selected option and why the other courses of action were rejected.

Compare the actual v budget and take corrective action if necessary

Once the course of action is underway it is essential that is monitored frequently and regularly to ensure it is conforming to expectations. If this is not the case then corrective action should be taken. There are two type of corrective action that can be taken that being feed- forward control and feedback control.

Feed-forward control would be a system that in a pre-emptive way reacts to changes in its environment, normally to maintain some kind of desired state. Feed-forward control systems react to future performance expected e.g. make control adjustments, before adverse conditions expected do occur.

- Forecasting ahead and doing something now before the event occurs
- Examples include cash budgeting or strategic planning
- Control action would be ‘closing the stable door before the horse bolts’

Feedback is any process where part of the output of a system is measured and returned as input to regulate the systems further output. Feedback normally involves gathering information on past performance from the output of a system, comparing it to a predetermined standard or plan and using any material deviations, as a basis of improving future performance.

- Feedback can be negative (adverse) or positive (favourable)
- Feedback is based on comparing actual to a standard of performance
- Control action would be ‘closing the stable door after the horse has bolted’

Example 10.5

M and A 'Hair and Beauty' are a company offering the highest standards of service for hair and beauty in Peterborough. They currently offer two basic services the cut, wash and blow dry and the pedicure/manicure. Financial details about these two services are as follows;

	CWBD	MP
	£	£
Price	75.00	35.00
Materials	(10.00)	(5.00)
Wages	(15.00)	(5.00)
Contribution	<u>50.00</u>	<u>25.00</u>
Hours	<u>1.5</u>	<u>0.5</u>

Maximum demand every week for the use of the MP services is 40 hours a week from customers.

M and A are thinking of revamping the side of their building, which they currently rent for £4,000 a year, however were going to sell it to the current tenants for £50,000 in one years time. This building will then be used to offer a third service the 'massage and aromatherapy' room, which M and A feel will have, they believe unlimited demand given the small capacity of the building. Each service will be charged at an average of £80 and will incur materials at an average cost of £12. It is likely that each service will use at least 1.5 hours of a beautician's time. The revamp to the building and the extra equipment needed would be in the region of £30,000 all in.

Currently M and A have one of the worse reputations for industry wages in the area. They employ 7 hairdressers which also act as beauty consultants and are paid £10 an hour. Each hairdresser works a 6-day week for 7 hours a day for 48 weeks a year, no holiday pay is given. Hairdressers would be willing to put in an average of 8 hours a week overtime (at time and a half) each, however the manager Margaret, is not keen on working staff hard, as she believes it affects the standard of service.

Margaret is paid £26,000 a year to run the shop and is currently decorating the premises. If the extension does go ahead Margaret will stop to manage the project and therefore will have to hire a decorator to finish the current job at a cost of £1,000. Checking the order book shows the shop is already at full capacity and given the low rate of pay it is unlikely that any more staff can be recruited. Margaret will be helping supervise and market the new service and it has been agreed that 20% of her salary will be apportioned to the cost of running the new service.

3 of the current hairdressers have agreed to train over the next few months as masseurs and aromatherapists at a cost to the company of £10,000. At a recent meeting all staff thought it was a good idea and it was also agreed that the overtime rules would be relaxed when the new building is opened in order to alleviate the staff shortage. There will also be extra rates, power and heating costs for the new part of the building of £28,000 each year.

Assuming M and A's order books are at full capacity, calculate whether on financial grounds M and A should go ahead with the proposal, also discussing any other factors M and A should take into account as to whether they should proceed with this new service or not?

10.3 Operating gearing

Measures the effect of fixed costs on operating profit.

Measured by operating gearing $\frac{\text{Contribution}}{\text{PBIT}} = \%$

Companies with very high fixed cost in comparison to total cost will find that their profits are more variable to sales volume changes.

If sales begin to fall then they will not be able to contract their fixed costs which they may be committed to for a long time, for example a 10 year lease agreement for a warehouse. They will still have to make lease payments whether or not sales occur, and profits will begin to fall.

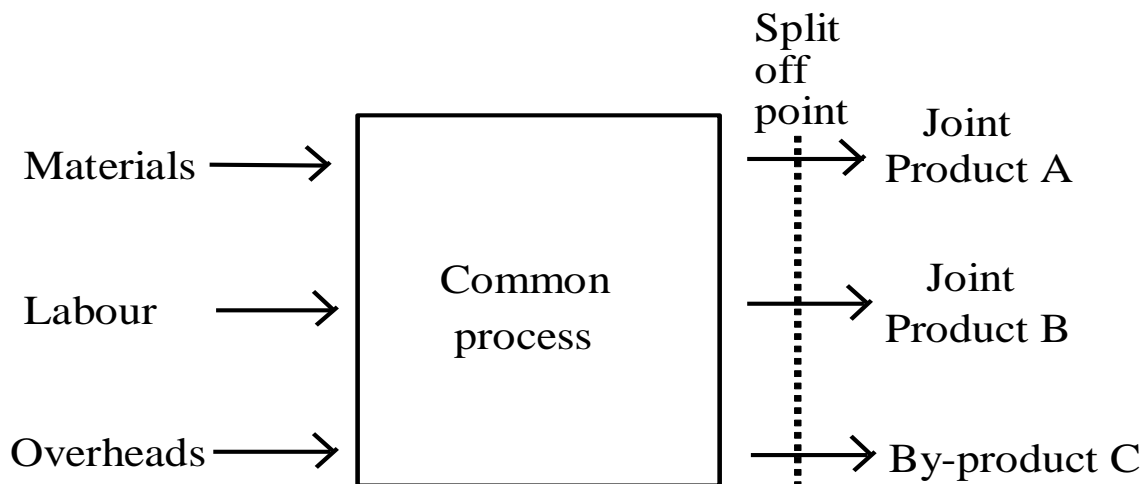
If sales begin to rise then they will have the spare capacity to be able to meet this demand as they have invested in fixed costs, for example a 10 year lease agreement for a warehouse, and profits will begin to rise.

Example 10.6

	High gear (£)	Low gear (£)
Sales	100	100
Variable cost	(10)	(60)
Contribution	90	40
Fixed cost	(60)	(10)
Profit	<u>30</u>	<u>30</u>

Evaluate the effect on profit due to a 20% drop in sales volume?

10.4 Joint products



Joint products are two or more valuable products produced from the same process, For example the slaughter of a cow in an abattoir would result in joint products being produced. The slaughter is the common process to the valuable joint products being the meat and the leather. By-products would also be produced from the slaughter of the cow that being offal.

A by-product from a process is a joint product at the split-off point, which has a relatively low sales value when compared to the other joint products produced. It is not the main reason for why the cow was slaughtered as mentioned in the example above. **By-products never have common costs apportioned to them for valuation purposes** as they are simply a small additional benefit.

When accounting for joint products, the cost of completed good output during the period would be apportioned between the joint products only (never by-products) on a fair and reasonable basis for stock valuation, pricing or profitability purposes. There is no correct or scientific approach to apportioning common cost it is a subjective basis.

The total cost of joint products at the split-off point is called a 'common cost'. **Common costs are irrelevant for decision-making.**

Methods of apportioning common cost

- **Physical or quantity basis** e.g. common cost apportioned by litres or weight (kg, tonnes etc) for each joint product.
- **Weighted average method** e.g. used when the joint products are not in the same physical state (solid, liquid or gas) by assigning 'weightings' to the physical state they exist in at the split off point.
- **Sales value method** e.g. common cost apportioned using the sales value of the joint products at their separation point (sales value before any further processing cost for each product).
- **Notional sales value (or sales proxy) method** e.g. common cost apportioned using the sales value of the joint products after deducting any further processing costs for each joint product after split off, in other words using net realisable values.

- **Final sales value method** e.g. common cost apportioned using the sales value of the joint products after further processing, but ignoring any deduction for further processing cost of each product after split off. After further processing, often the sales value of joint products would increase.

Methods of apportioning common costs between joint products

Physical measurement

Common costs £3,000

Two products are produced from the same process, details of which are;

JPM 750 Kg
 JPN 1,500 Kg
2,250 Kg

JPM $750 / 2,250 \times £3,000 =$ £1,000
 JPN $1,500 / 2,250 \times £3,000 =$ £2,000
£3,000

Sales value at split-off point

Common costs £3,000

JPM £2.00 a unit selling price
 JPN £3.00 a unit selling price

750 x £2 = £1,500
 1,500 x £3 = £4,500
£6,000

JPM $1,500 / 6,000 \times £3,000 =$ £750
 JPN $4,500 / 6,000 \times £3,000 =$ £2,250
£3,000

Sales value at split-off point less further processing costs

Common costs £3,000

JPM has further processing cost of £1 a unit. JPN has no further processing cost.

750 x (£2 - £1) = £750
 1,500 x £3 = £4,500
£5,250

JPM $750 / 5,250 \times £3,000 =$ £429
 JPN $4,500 / 5,250 \times £3,000 =$ £2,571
£3,000

Weighted average method

Used when the joint products are not in the same physical state (solid, liquid or gas).

Common costs £3,000

JPY 2,000 tonnes (weighting factor 2.5)

JPZ 60,000 litres (weighting factor 0.5)

$$\begin{array}{r} \text{JPY } 2,000 \times 2.5 = \quad 5,000 \\ \text{JPZ } 60,000 \times 0.5 = \quad \underline{30,000} \\ \hline \quad \quad \quad \underline{35,000} \end{array}$$

$$\begin{array}{r} \text{JPY } 5 / 35 \times \text{£}3,000 = \quad \text{£}429 \\ \text{JPZ } 30 / 35 \times \text{£}3,000 = \quad \underline{\text{£}2,571} \\ \hline \quad \quad \quad \underline{\text{£}3,000} \end{array}$$

Remember common costs are never shared amongst by-products and are irrelevant for decision making when considering processing joint products further

10.5 Relevant costing for future processing of joint products

Using relevant costing, problems may also arise as to the decision whether or not to process a joint product further or not. Common costs are irrelevant when making this decision.

The extra revenue if you do process it further would be compared to the extra cost of processing it further. So long as the extra revenue exceeds the further cost, the decision is worthwhile financially.

Example 10.7

Common costs £3,000

Two products are produced from the same process, details of which are

JPM 750 Kg
JPN 1,500 Kg
2,250 Kg

Sales value at split-off point

JPM £2.00 a unit selling price
JPN £3.00 a unit selling price

750 x £2 = £1,500
1,500 x £3 = £4,500
£6,000

Common cost apportioned:

JPM $1,500 / 6,000 \times £3,000 = £750$
JPN $4,500 / 6,000 \times £3,000 = £2,250$
£3,000

JPM could be processed further and sold for £2.50, however this would incur an extra £500 of costs, is the further processing of this product financially worthwhile?

10.6 Shut down decisions

'Whether or not to discontinue a product or shut down a division or department?

So long as the contribution earned by the department, division or product is more than any product or site-specific fixed overhead, then the decision on financial grounds would be to keep it going.

Qualitative factors would weigh heavily on the decision as well.

Example 10.8

Me ole cock spaniel Plc produces 3 products, apples pears and cockneys. Details of which are as follows;

	Apples	Pears	Cockneys
	£000s	£000s	£000s
Sales	10,000	20,000	40,000
Variable cost	<u>(5,000)</u>	<u>(5,000)</u>	<u>(7,000)</u>
Contribution	5,000	15,000	33,000
Fixed cost	<u>(8,000)</u>	<u>(9,000)</u>	<u>(12,000)</u>
Profit/(loss)	<u>(3,000)</u>	<u>6,000</u>	<u>21,000</u>

Head office apportioned overhead is allocated to each product at 100% of variable cost, the remaining overhead being product specific.

Should apples be discontinued?

Example 10.9 - (CIMA past exam question)

Z is one of a number of companies that produce three products for an external market. The three products, R, S and T may be bought or sold in this market. The common process account of Z for March 2007 is shown below:

	Kg	\$		Kg	\$
Inputs:			Normal loss	500	0
Material A	1,000	3,500	Outputs:		
Material B	2,000	2,000	Product R	800	3,500
Material C	1,500	3,000	Product S	2,000	8,750
Direct labour		6,000	Product T	1,200	5,250
Variable overhead		2,000			
Fixed cost		1,000			
Totals	4,500	17,500		4,500	17,500

Z can sell products R, S or T after this common process or they can be individually further processed and sold as RZ, SZ and TZ respectively. The market prices for the products at the intermediate stage and after further processing are:

Market prices per kg:	
	\$
R	3.00
S	5.00
T	3.50
RZ	6.00
SZ	5.75
TZ	6.75

The specific costs of the three individual further processes are:

Process R to RZ variable cost of \$1.40 per kg, no fixed costs

Process S to SZ variable cost of \$0.90 per kg, no fixed costs

Process T to TZ variable cost of \$1.00 per kg, fixed cost of \$600 per month

(a) Produce calculations to determine whether any of the intermediate products should be further processed before being sold. Clearly state your recommendations together with any relevant assumptions that you have made.

(b) Produce calculations to assess the viability of the common process:

(i) assuming that there is an external market for products R, S and T; and

(ii) assuming that there is not an external market for products R, S and T.

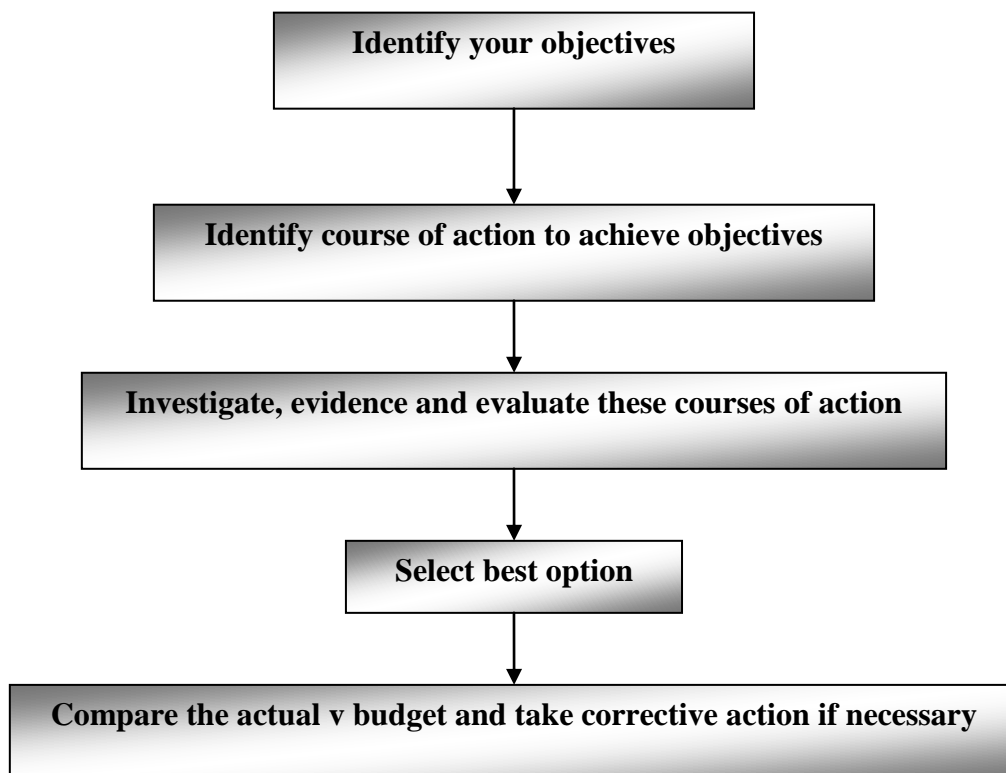
State clearly your recommendations.

Key summary of chapter

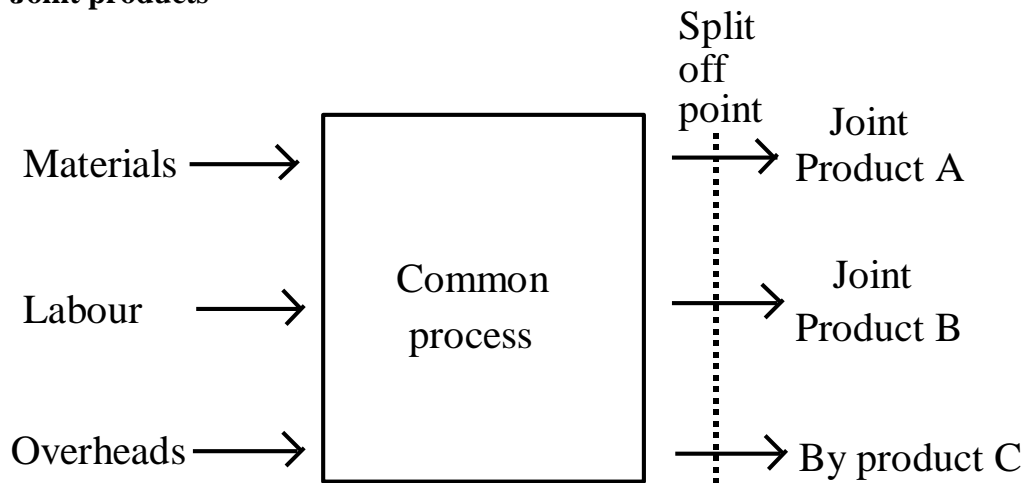
Basic concepts

- **Relevant cost** - future incremental cash flow arising directly from a decision made.
- **Fixed cost** - cannot be economically identified with a specific saleable cost unit.
- **Sunk costs** - already been incurred and cannot be recovered in the future.
- **Committed costs** - incurred in the future irrespective of the decision taken.
- **Notional costs** - no actual cash flow has been incurred as a result of the decision.
- **Common costs** - identical for all alternatives taken and hence not relevant.
- **Opportunity costs** - next best alternative foregone by the choice of a future decision.
- **Avoidable costs** - saved or avoided as a result of not doing an activity.
- **Differential or incremental costs** - difference between alternative decisions.
- **Qualitative factors** - cannot be expressed numerically.
- **Operating gearing** - measures the effect of fixed costs on operating profit.

The decision making process



Joint products



Methods of apportioning common costs between joint products

- Physical measurement
- Sales value at split-off point
- Sales value at split-off point less further processing costs
- Weighted average method

Remember common costs are never shared amongst by-products and are irrelevant for decision making when considering processing joint products further.

Solutions to lecture examples

Chapter 10

Example 10.1

The question is asking for the lowest cost estimate and so therefore we should not include profit or fixed overheads in our calculations.

Currently Lady Gaga Plc's work force is at full capacity and so if the new work was to be undertaken from Ginger Blears then we would have to stop existing work to carry this out, and therefore we would have to calculate lost contribution and include this in the minimum price.

	Per song (£)	
Selling price	45,000	Lose (W1)
Material	(5,000)	Save (W2)
Variable overheads	(3,000)	Common costs (W3)
Labour	<u>(2,000)</u>	Common costs (W3)
Contribution	35,000	
Fixed overhead	<u>(1,500)</u>	Sunk (W4)
Profit	<u>33,500</u>	

Lost contribution is therefore $£45,000 - £5,000 = £40,000$

Workings

(W1) – Selling price

We would lose this sale as we are stopping the existing manufacture of a current song to do the song for Ginger Blears.

(W2) – Material

We would save this cost as we are stopping the existing manufacture of a current song to do the song for Ginger Blears.

(W3) – Variable overheads and labour

We would save these costs as they are variable and will no longer be used on the existing manufacture of a current song; however we would have to spend these exact same costs to manufacture the song for Ginger Blears. Therefore these costs are common to both decisions and are irrelevant to the decisions taken.

(W4) – Fixed overheads

These costs have already been spent and will have no impact on the decisions taken.

Alternative way to calculate lost contribution

Add up all variable costs, labour costs and existing contribution.

Variable overheads $£3,000$ + Labour costs $£2,000$ + Contribution $£35,000 = £40,000$

Example 10.3 – (CIMA past exam question)

The left over paper in X plc is not regularly used. It was originally bought for \$15 per ream. This is a historic cost and should be ignored as it is not the current value of this paper. The paper has a resale value of \$10 per ream. This is our relevant cost of using the 100 reams in X plc for the special order.

However we need a total of 250 reams for the special order, and therefore the remaining 150 reams must be bought at current market price of \$26 per ream.

Therefore:

$$(\$10 \times 100 \text{ reams}) + (\$26 \times 150 \text{ reams}) = \$4,900$$

Example 10.4

The historical cost is irrelevant.

The current replacement cost of £4.50 per kg is irrelevant (GLS does not intend to replace the stock once it has been used).

If the stock is handed over to the customer GLS would lose the ability to sell the stock to a scrap merchant and therefore lose £2,200 proceeds.

GLS could have also used the material to produce 500 water cans (1,000kg/2kg per unit) saving £8.00 per unit on lower quality ore (£8 x 500 = £4,000), if it substituted this for the high quality iron ore stock it has.

Faced with no offer from the customer GLS rationally would have chosen to save £4,000 in cost rather than earn £2,200 from a scrap merchant.

Therefore GLS would be better off by £5,000-£4,000 = £1000, if it took the customers money.

Accept.

Example 10.5

	CWBD	MP
Contribution per hour	£33.33	£50.00
Rank	2nd	1st

Contribution per unit of massage £80-£15 labour (£10 x 1.5 hours) - £12 material = £53 / 1.5 hours = contribution per labour hour £35.33 more profitable than CWBD but less than MP. Therefore production should be in the following priority if M and A are to maximise contribution

1. MP
2. Massage
3. CWBD

MP earns the most contribution given full capacity of the shop; however demand is limited to just 40 hours a week. M and A should produce all MP then as much as they can for the new massage service then any hours left, use them for CWBDs. For the massage service however a further constraint exists, that is it can only be offered using only 3 trained masseurs.

Workings

(W1) Opportunity Cost Calculation

Current Hours per week

7 Staff x 7 Hours per day x 6 days a week = 294 hours

40 hours used on MP and the remaining 254 hours used on CWBDs

Maximum hours 294 + (8 hrs a week x 7 staff in overtime) = 350

Hours available for massage service

3 staff x 7 hours x 6 days (+ 8 hours overtime x 3 staff) (150)

200

294 – 200 hours = 94 hours to take away from CWBDs (as these are the least profitable)

94 hours lost x 48 weeks a year x £33.33 an hour = £150,385 lost contribution (+ 94 hours x £10 wage per hour x 48 weeks a year) = £195,505 relevant cost.

Or 94 hours lost / 1.5 hrs per CWBD = 62.7 CWBDs lost per week (lose £75 price but save £10 materials) £65 = £4,076 a week x 48 weeks = £195,648 relevant cost.

Relevant cost

	£
Opportunity cost (W1)	195,505
Training	10,000
Overtime (7 staff x 8 x 48 x (1.5 x £10 per hour)	40,320
Loss of rent	4,000
Loss of sale revenue from building	50,000
Decorating	1,000
Revamp of building	30,000
Extra light, heat and power	<u>28,000</u>
Minimum price	<u>358,825</u>

The minimum price to be covered in order to offer the massage service would be £358,840

The hours from running the new service:

150 hours per week x 48 weeks = 7,200 hours

The contribution from the new service:

7,200 hrs x £35.33 contribution per hour from massage = £254,376.

Add back labour: 7,200 hours x £10 p/hr = £72,000

The relevant benefit = £254,376 + £72,000 = £326,376

This will not be enough to cover the minimum price (or cost) of £358,840 and therefore should be rejected on financial grounds. The £50,000 loss of sale of the building and the revamp cost of £30,000 could possibly be ignored as a future annual cost, which would improve the financial justification.

Qualitative factors

Working conditions will deteriorate given that staff are working all hours.

If M and An increased wages then surely more staff maybe recruited and therefore the contribution lost from CWBDs will not arise.

Surely the business should increase MPs SEEING AS THEY ARE THE MAJOR CONTRIBUTION EARNER rather than offering massage services?

Will Margaret also be overstretched by this?

Is there demand for this service in Peterborough?

Will massage cannibalise other sale of services?

What about the capacity in the other part of the building now that 3 staff have moved next door, could M and A use this space to sell other products or services? This would generate more contribution for the shop.

Example 10.6

Financial results, should sales volume drop by 20%:

	High gear	Low gear
Sales	80	80
Variable cost	<u>(8)</u>	<u>(48)</u>
Contribution	72	32
Fixed cost	<u>(60)</u>	<u>(10)</u>
Profit	<u>12</u>	<u>22</u>

With High Gear $\frac{\text{Profit fall } 18}{\text{Profit before } 30} = 60\% \text{ fall in profit}$

Operating gearing ratio $\frac{90 \text{ contribution}}{30 \text{ profit}} = 300\%$

A 20% fall in sales volume created a 60% fall (or 3 or 300% of 20%) in profit

With Low Gear $\frac{\text{Profit fall } 8}{\text{Profit before } 30} = 26.7\% \text{ fall in profit}$

Operating gearing ratio $\frac{40 \text{ contribution}}{30 \text{ profit}} = 133\%$

A 20% fall in sales volume created a 26.7% fall (or 1.33 or 133% of 20%) in profit

Example 10.7

Further processing of JPM

$(£2.50 - £2.00) \times 750 \text{ units} = £375$

It would cost £500 extra to earn this so $£375 - £500 = (£125)$ it is not worthwhile.

Example 10.8

Me ole cock spaniel Plc

Contribution is £5,000 earned so long as you keep the product.

Of the fixed cost £8,000 - (100% £5,000) = £3,000 is site specific overhead and therefore avoidable if you discontinue the product, therefore **it should NOT be discontinued** on financial grounds as the company would be **£2,000 worse off financially**.

Contribution	£5,000
Site specific overhead	(£3,000)
Net contribution to company profit	<u>£2,000</u>

Qualitative issues that should be considered:

By shutting down Apples this will reduce the product range offered. This may mean that people may then buy their Pears and Cockneys elsewhere which provide the full convenient range under one roof.

How will this affect the close substitutes and complimentary products to Apples?

Example 10.9 - (CIMA past exam question)

(a)

We need to work out the extra benefit of making RZ, SZ and TZ and then compare these to the extra cost involved. We should make those which give a net extra benefit.

Product	Extra benefit	Extra variable cost	Extra fixed cost	Net
RZ	$\$6.00 - \$3.00 = \$3.00$	\$1.40	Nil	\$1.60
SZ	$\$5.75 - \$5.00 = \$0.75$	\$0.90	Nil	(\$0.15)
TZ	$\$6.75 - \$3.50 = \$3.25$	£1.00	$\$600 / 1200 \text{ kg} = \0.50	\$1.75

Products R and T should be further processed to produce products RZ and TZ respectively as they provide an extra net benefit of \$1.60 and \$1.75 per kg respectively.

We have assumed that future production levels of product TZ would be based on current levels and so therefore the extra fixed costs per unit is based on 1,200 kg.

Product S should not be further processed to make product SZ as there is a net cost of \$0.15 per kg every time an SZ is produced.

These recommendations are based purely on financial grounds and the company should also look at qualitative factors as well before making their final decisions.

(b)

(i)

Product	Selling price	Kg	Total sales value
R	\$3	800	\$2,400
S	\$5	2,000	\$10,000
T	\$3.50	1,200	\$4,200
			<u>\$16,600</u>

The common costs = \$17,500. Therefore there would be a net loss of \$900 if the products R, S and T were sold to the external market. It is not financially viable.

(ii)

If there is no external market for R, S and T then we must further process all these products to produce RZ, SZ and TZ which can be sold.

Product	Net benefit per kg	Kg	Total (\$)
RZ	\$1.60	800	1,280
SZ	(\$0.15)	2,000	(300)
TZ	\$1.75	1,200	<u>2,100</u>
			<u>3,080</u>
Loss from the common process			(900)
Net benefit			<u>2,180</u>

After further processing the products it now is financially viable as there is a net benefit of \$2,180.