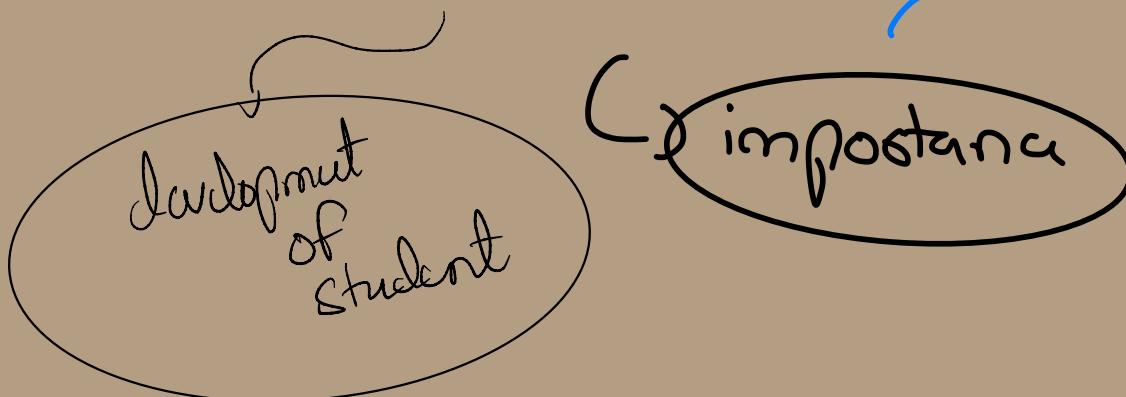


→ P6, P7, P4
PS

Advanced Performance Management

APM → PS



Statically
↓
Strong

By,

Abdul Basit

ICAEW, ACCA, BSC



Advanced Performance Management → APM

Orientations

FS

→ The best paper which provide greater information about business and its strategy

edge

→ understand question well

→ writing skills are good and can construct sentences

→ ATX → TX, AAA → AA, Afm → fm

↳ strong → topic revision

→ APM → PM

How is APM different from PM

→ PM tests the candidate's ability in the application and analysis of core management accountancy techniques

→ Banana ↗ ABC, TC, LCC, TQM

→ Building block FMA

→ APM develops key outputs introduced at the FS/PM level with more of a focus on the synthesis and evaluation of key topics and techniques

↳ discussion aspects

what is difference between SBL and APM

SBL → analysis of culture, environment, capability, structural analysis

↳ terminology, accountancy

APM → more of an accountancy focus

→ more specifically concerned on controls, measurements, improvement of performance etc

↳ elaborating facts

Fig

Post S forces, PESTEL

↳ SBL → investing something → PEST

→ Post S forces

APM → improvement → BPC ↑

→ Post diagnosis

GPS ↓ Threats of re-introduction

Summary

→ to exercise professional judgment in selecting and applying strategic management accountancy techniques in different business contexts and to contribute evaluation of performance of an organisation.

↳ Business Consultant

↳ business information

Course outline of APM

Sections

→ compulsory

→ lot of questions

A ① Strategic planning and control

↳ budgeting and control ✓

↳ Business structure ✓

↳ Environment, social and governance ✓

B ② Performance management information systems and tech

↳ Performance reports for managers ✓

→ Performance measures in private and not-for-profit ✓

→ HR aspects of performance ✓

→ Divisional analysis ✓

C ③ Strategic performance measurement

→ Financial performance measurement ✓

→ Non-financial performance indicators ✓

→ PM of private and not-for-profit ✓

D ④ Performance evaluation

→ Comparisons of different financial measures ✓

→ role of quality in performance measurement ✓

E ⑤ Professional skills

→ Analysis, scepticism, Evaluation, communication

→ Professional skills, communication

APM → PI

↳ individual feedback → student mistakes get reduced
↳ extensive practice of past papers

Paper structure

→ 3 hours exam & 15 min in planning time 3:15

Section A → in exam time, so if this exam would be easy →

→ 1 Compulsory question comprising of 50 marks

Syllabus

↳ A, B, C → E

SO

↳ 40 marks technical marks

↳ 10 marks professional marks

↳ behave/write in

→ All professional skills will be tested in Section A -

Section B

→ 2 Compulsory questions of 25 marks each

→ 20 technical marks and 5 professional marks

↳ minimum of 2 professional skills

Professional Skills

→ Analysis

→ Evaluation

→ Communication

→ Scepticism

→ Commercial acumen

↳ Past papers →
→ how to develop these skills

→ How we teach → English module number → Exam practice platform

→ live classes + recorded lectures

→ weekly live class → new past papers solve

→ notes

→ mock exams → individualised feedback

→ Grand session → last 2 weeks

↳ covering each topic, → past paper will be solved
↳ how this topic is been

	SBL	SBR	Afm	APM	ATX	AAA
Dec 2023	52	50	45	34	49	34
Sep 2023	50	50	45	34	48	34

Registers

+92 331 2623 849

→ Admin contact → Misraawala

→ website enrollment → MHA → www.misraawala.com

→ tutor

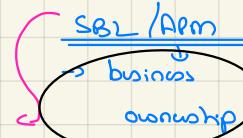
+92 331 2623 849

(ATY) → tax specification

(PFM) → financial managers

(AAA) → Auditors

(SBR) → supporting ITAs



→ Study plan

Course Breakdown & Planner

↳ Pattern of our study

→ Complete a lecture of topic → examples

→ Past papers → topical (1 topic & then

past papers to understand that

topically → completely topic)

→ Once we have covered all the topics, we will go and attempt all the past papers, but this time we will attempt the complete one

Chapters breakup

- ① Mission & vision
- ② Financial performance indicators
- ③ Performance management and measurement
- ④ Non Financial performance indicators
- ⑤ Balance Scorecard model
- ⑥ Building block model
- ⑦ Performance & post
- ⑧ Performance pyramid
- ⑨ Budgeting & Standard costing
- ⑩ Current development → Quality costs
- ⑪ Current development → Six sigma
- ⑫ Current development → League tables

60%

1/2

15%

extensive practice

- ⑬ Current development → value based management
- ⑭ Current development → Environmental management Accounting
- ⑮ Divisional performance management
- ⑯ Transfer pricing
- ⑰ External influences
- ⑱ Business integration
- ⑲ Business structures
- ⑳ IT developments and information systems
- ㉑ Not for profit organisation
- ㉒ Strategic management
- ㉓ Lean management
- ㉔ Human resource management
- ㉕ Integrated reporting → total in multiple pages

↳ most recent attempts → exam platform

weaknesses of
exam platform
and how it
behaves

↳ do's and don'ts of APM

How APM should be covered? → student point of view

→ first, cover all lectures → 120-150 hours are covered

→ Read examine answers of attempted past papers in the class → (to get additional points)

→ try to attempt different papers (old past papers)

✓ (we had attempted in the class)

→ Start this to me for individual feedback so that student can work on their mistakes

→ attempt 3-4 marks in exam time and conditions and on exam platform (individual feedback of your tutor mandatory)

In an APM world, you are an Business Consultant.

✓
each and every consultation regarding business - you can provide

Pdf → Lms

↳ Pdf → my detailed hand written notes

→ Examine articles

→ Icicles kit → (Solve some of the questions of it)

→ Book reading × (Lms / Platform)

→ my own hand written notes ✓

→ 4 weekly classes → live + recorded

↳ MHA LMS

Topic 1 :- Mission & Vision / CSF / KPI's

Topical breakup
of classes.

- ↳ detailed discussion theory
- ↳ Practical examples
- ↳ Past paper practice
- ↳ technical articles → read by students

Mission

- purpose and aims of the organisation
- major stakeholders are interested in missions of an entity as they want to assort for long term

Example

① Cola Cola

- to infect the world
- to inspire moments of optimism and happiness
- to create value and make a difference

② Samsung

- At Samsung, we follow a single business philosophy, to devote our talent to technology to create superior products and services that contribute to a better global society.

↳ basic
↳ identify mission

June 2017 - Question 1 → Extract

The mission of DS is 'to give the shareholders maintainable, profitable growth by developing the best talent to provide world-class services with maximum efficiency.'

June 2013 - Question 1

Its stated mission is: 'to become the No. 1 hotel chain in Ostland, building the strength of the Kolmog brand by consistently delighting customers, investing in employees, delivering innovative products/services and continuously improving performance'.

SBL & APM → Subjective, students answer cannot be same & yet they can score the same marks.

- ↳ multiple answers of a question
- Examiner allows to give a point and analyse - subjectivity

Benefits

- prevents conflicts → one mission is clear
 - helps you in doing the decision making.
- you have to decide in a manner that mission gets successful.

Drawbacks

- might be unclear of mission → misinterpret
- not represent actual values behind that mission. (undesired)

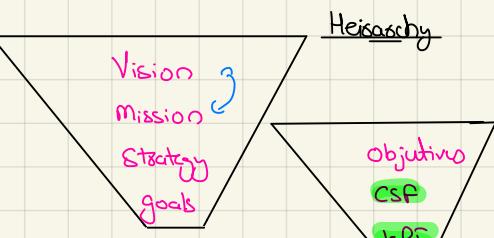
Another exam example

Advise the directors of CFD regarding the appropriateness of its mission statement?

When CFD was formed, the directors created a mission statement which was 'to provide very high value for money to all of our clients'.

The directors have always attempted to manage CFD in a socially responsible manner. Indeed, they are now considering the creation of a 'Dog Sanctuary' for homeless dogs moving dogs which would involve an allocation of 20% of the total accommodation available for dogs to the Dog Sanctuary. The Dog Sanctuary would accommodate homeless dogs until such time as a new owner was found for them. CFD would not receive any revenue whatsoever in respect homeless dog.

↳ Our mission is not been followed, rather providing value, it seems that we are doing socially responsible acts.



Critical Success Factors (CSF)

CSF focus on the most important areas and get to the heart of both - what is to be achieved and how you will achieve? In simple words, The areas in which business should must win.

How to determine the Critical Success Factors?

- ① industry structure → Education Service provider
 - ↳ quality education
 - no of positions → Good Grade
- ② Competitive strategy → Cost leadership → cheap products
 - Cost reductions
 - ↳ differentiation → innovative products
- ③ Environmental factors → oil company
 - ↳ pollute
 - ↳ Carbon reduction
 - reducing env damage
- ④ Temporary factors
 - Economic shift
 - ↳ Safety of citizens
 - ↳ Providing shelter
- ⑤ functional manager's position
 - ↳ Sales manager → high sales
 - high margins
 - your product is very user friendly
 - ↳ Marketing director
 - ↳ efficiently production availability of product

Section A – BOTH questions are compulsory and MUST be attempted

→ old one → handwritten
→ practice platform

1 Film Productions Co (FP) is a small international company producing films for cinema release and also for sale on DVD or to television companies. FP deals with all areas of the production from casting, directing and managing the artists to negotiating distribution deals with cinema chains and TV channels. The industry is driven by the tastes of its film's audience, which when accurately predicted can lead to high levels of profitability on a successful film.

The company's stated mission is to 'produce fantastic films that have mass appeal'. The company makes around \$200 million of sales each year equally split between a share of cinema takings, DVD sales and TV rights. FP has released 32 films in the past five years. Each film costs an average of \$18 million and takes 12 months to produce from initial commissioning through to the final version. Production control is important in order to hit certain key holiday periods for releasing films at the cinema or on DVD.

The company's films have been moderately successful in winning industry awards although FP has never won any major award. Its aims have been primarily commercial with artistic considerations secondary.

The company uses a top-down approach to strategy development with objectives leading to critical success factors (CSFs) which must then be measured using performance indicators. Currently, the company has identified a number of critical success factors. The two most important of these are viewed as:

- (i) improve audience satisfaction
- (ii) strengthen profitability in operations

At the request of the board, the chief executive officer (CEO) has been reviewing this system in particular the role of CSFs. Generally, the CEO is worried that the ones chosen so far fail to capture all the factors affecting the business and wants to understand all possible sources for CSFs and what it means to categorise them into monitoring and building factors.

These CSFs will need to be measured and there must be systems in place to perform that role. The existing information system of the company is based on a fairly basic accounting package. However, the CEO has been considering greater investment in these systems and making more use of the company's website in both driving forward the business' links to its audience and in collecting data on them.

The CEO is planning a report to the board of Film Productions and has asked you to help by drafting certain sections of this report.

Required: → format → Professional marks

You are required to draft the sections of the CEO's report answering the following questions: → case → Potential
(a) Explain the difference between the following two types of CSF: monitoring and building, using examples appropriate to FP. (industry) (4 marks)

(b) Identify information that FP could use to set its CSFs and explain how it could be used giving two examples that would be appropriate to FP. (6 marks)

(c) For each of the two critical success factors given in the question, identify two performance indicators (PIs) that could support measurement of their achievement and explain why each PI is relevant to the CSF. (10 marks)

(d) Discuss the implications of your chosen PIs for the design and use of the company's website, its management information system and its executive information system. (9 marks)

Professional marks will be awarded in Question 1 for appropriateness of style and structure of the answer. (2 marks)

(31 marks)

→ CSFs are those areas of business performance where the company must succeed in order to achieve its overall strategic objectives.

→ Building CSFs are those which look to the future of the organisation and its development, e.g. the launch of niche products or the use of new distribution methods, such as downloadable films.

→ monitoring CSFs are those that are used to maintain ongoing operations, for e.g., comparison of actual results to budget for each movie & industry average.

b

The Company can use information about the internal and external environment to set its CSF's.

Relevant external information would include the structure of industry of FP's competitors. The geographical location of production and the main sales markets may also be relevant.

Relevant internal information would include measures of seasonality on sales which will dictate the timing of film releases and effectiveness of marketing campaign. Track of the films and story that were successful to understand the customer.

c

① Audience Satisfaction

Performance indicators

No of repeat viewings

With TV showings, it will be possible to measure viewings for each showing of the film and monitor the decline in viewing over repetitions. The level of DVD purchases following a cinema will also indicate customer satisfaction with customers actively wanting to own this copy of favourite film.

Positive response of media

Scores by film critics often appear in the media and these give a measure of satisfaction. This category must be treated carefully as critics often look for artistic merit while FP is seeking commercial success and broad audience acceptance.

② Profitability

Performance indicators use

Costs breakup

Cost should be broken down into categories such as those for artists, production, technicians and marketing. Cost structure for each film should be compared internally to others that FP produces and externally – comparable figures in industry.

% of profit per film → margin per film

This will indicate the profits we are making on films and the reason could be identified of high and low profits trend analysis can be monitored and seasonal effects on profits can be considered.

→ making my own notes, will share in PDF, what app
↳ suggest you send that

→ try to send scanned answer of question we have attempted in class.

→ Examining articles

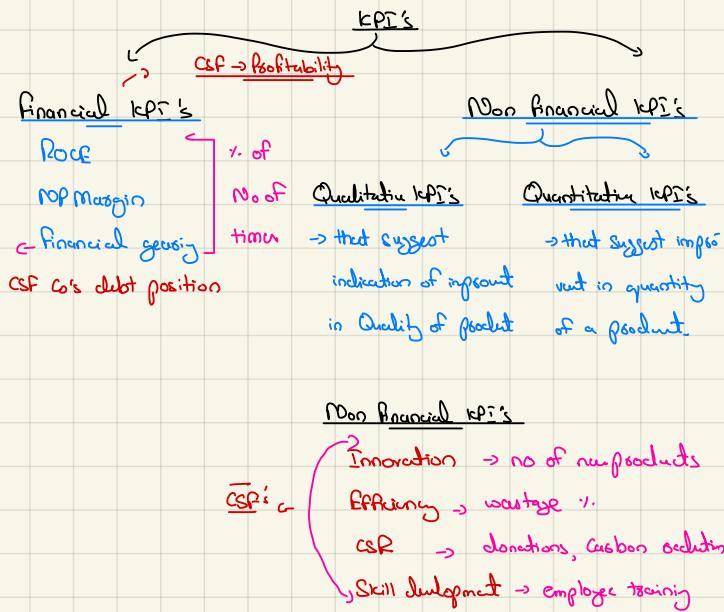
earlier studies → PS as well as other skills (law, phys) ↓
 you are a Business Consultants
 (benefits business)

key performance indicators (KPI's)

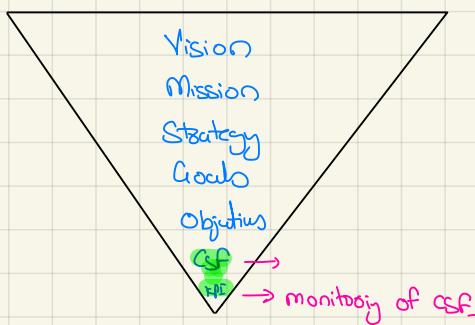
an indicators which indicates performance of business's

CSF (Critical Success Factors)

→ CSF checking & tracking



Hierarchy



Performance Measurement

- Return on Capital employed
- Asset turnover
- Gross profit margin
- Basic Performance indicators for Profitability
- Operating margin
- ROB & profit margin

ROE

$$\frac{\text{Profit before int and tax}}{\text{Capital employed}} \times 100 \rightarrow \text{primarily indicators of profitability}$$

total assets - current liability
 equity + long term debt

Asset turnover

Sales → what is sales being generated on employed money (capital).

Capital employed

Gross profit margin

$$\frac{\text{Gross profit}}{\text{Sales}} \times 100 = \% \rightarrow \text{Primarily suggests product profitability}$$

Operating profit margin

$$\frac{\text{Operating profit}}{\text{Sales}} \times 100 = \% \rightarrow \text{Co's profitability}$$

Basic indicators of liquidity

Current ratio

$$\frac{\text{Current assets}}{\text{Current liabilities}} \rightarrow \text{liquidity (cash position of the Co.)}$$

$$\rightarrow 1.6 : 1$$

Acid test ratio

$$\frac{\text{Current assets} - \text{stocks}}{\text{Current liabilities}} \rightarrow \text{liquidity (cash position of the Co. but excludes inventories)}$$

$$\rightarrow 0.8 : 1$$

Inventory days

$$\frac{\text{Inventory}}{\text{Cost of goods sold}} \rightarrow \text{days} \rightarrow \text{days} \rightarrow \text{week} \rightarrow \text{month}$$

$$+ 365 \text{ days} \times 52 \times 12$$

Scorable days

$$\frac{\text{Scorable}}{\text{Credit Sales}} \rightarrow \text{days} \rightarrow \text{week} \rightarrow \text{month}$$

$$+ 365 \text{ days} \times 52 \times 12$$

Payable days

$$\frac{\text{Payable}}{\text{Credit Purchases / COGS}} \rightarrow \text{days} \rightarrow \text{week} \rightarrow \text{month}$$

$$+ 365 \text{ days} \times 52 \times 12$$

Cash operating cycle

$$\begin{aligned} \text{inventory days} &= + 10 & \text{S} \\ + \text{scorable days} &= + 10 & \rightarrow \text{bottleneck} & \text{S} \\ - \text{payable days} &= - 15 & \rightarrow \text{Cash shortfall} & \text{C2D} \\ & & \underline{15} & + (-) \\ & & & \text{C1D} \end{aligned}$$

Cash inflow → invest

Financial Performance → Risk ratios

Financial Gearing

$$\frac{\text{Debt}}{\text{Debt} + \text{Equity}} \times 100 \rightarrow \frac{\text{Debt}}{\text{Debt} + \text{Equity}} = \frac{\text{Debt} \times 100}{\text{Debt} + \text{Equity}}$$

or

$$\frac{\text{Debt}}{\text{Equity}} \times 100 \rightarrow \frac{\text{Debt} \times 100}{\text{Equity}} = \underline{100\%}$$

Operational gearing

→ burden of fixed cost

Fixed Cost × 100 (Sales goes down, FC goes down)
Total Cost (FC with no impact)

→ how much cost position is fixed → ?

Interest cover

Profit before int & tax → how many times you can pay FC from profit
 → 8 times

Investment Appraisal → Risk & uncertainty

→ Risk = outcomes having Probability
 Uncertainty = outcomes having no probability → the things which you cannot estimate

Sensitivity Analysis

→ if a change in variable occurs, what would be the impact on other variable

→ through sensitivity analysis most critical variable which if changed will affect ultimate decision

formulae

$$\text{NPV} \times 100$$

Pound value of cashflows under consideration

Ex:

The total investment in the project is £80,000 having life of 4 years.

$$SP = \$30 \quad VC = \$6 \quad FC \text{ per annum} = \$600$$

Sales unit: 1000

Sensitivity

→ Calculate NPV of the project w.r.t. cost of capital.

Calculate Sensitivity analysis of following variables

- ↳ SP → instant → Cost of Capital
- ↳ VC → contribution
- ↳ FC → Sales volume

NPV

	0	1	2	3	4
investment	(\\$80,000)				

SR	30000	30000	30000	30000
VC	(6000)	(6000)	(6000)	(6000)
FC	(\\$600)	(\\$600)	(\\$600)	(\\$600)
CF	14000	14000	14000	14000

$$DPF \rightarrow 10\% \rightarrow AF$$

$$(1+g)^{-n}$$

$$\delta \quad (\$80,000)$$

$$60280$$

$$\text{NPV} = 10,280 \text{ £}$$

Sensitivity Analysis

↳ Critical

$$\begin{aligned} \text{→ Selling price} &= \frac{10,280}{PV} \\ &= \frac{10,280}{0.8100} \\ &= 12,681 \quad (\text{Con}) \end{aligned}$$

↳ 10.8% change in selling price world
Result: NPV is 0, but the other factors remains same

$$\begin{aligned} \text{→ Variable cost} &= \frac{10,280}{PV} \\ &= \frac{10,280}{1.4020} \\ &\rightarrow 6000 \times 3.17 = 19,020 \end{aligned}$$

↳ 8.7% change in fixed cost world
Result: NPV is 0, but the other factors remains same

$$\begin{aligned} \text{→ Fixed Cost} &= \frac{10,280}{PV} \\ &= \frac{10,280}{1.5880} \\ &\rightarrow 6000 \times 3.17 = 18,860 \end{aligned}$$

↳ 8.5% change in fixed cost world
Result: NPV is 0, but the other factors remains same

$$\begin{aligned} \text{→ instant} &= \frac{10,280}{PV} \\ &= \frac{10,280}{\$6000} \\ &\rightarrow \$6000 + 1 = \$6000 \end{aligned}$$

↳ 20.5% change in instant world
Result: NPV is 0, but the other factors remains same

$$\begin{aligned} \text{→ Contribution} &= \frac{10,280}{PV} \\ &= \frac{10,280}{\$6000} \\ &\rightarrow 24000 \times 3.17 = 76,800 \end{aligned}$$

↳ 13.4% change in contribution world
Result: NPV is 0, but the other factors remains same

$$\begin{aligned} \text{→ Sales volume} &= \frac{10,280}{PV} \\ &= \frac{10,280}{76,800} \\ &\rightarrow 24000 \times 3.17 = 76,800 \end{aligned}$$

↳ 13.4% change in sales volume world
Result: NPV is 0, but the other factors remains same

$$\begin{aligned} \text{Con} &= SP - VC \\ &\downarrow \\ \underline{\text{Con}} &= SP - VC \end{aligned}$$

→ if volume gets decreased

Risk & Uncertainty

+0233126238u9

APM 18QL

→ Sensitivity analysis

→ Expected value

→ Simulation

→ Discounted payback

→ Risk Specific cost of Capital

Advantages of Sensitivity

→ Simple to calculate

→ Not a decision rule

→ Critical variables

→ Change in isolation (Assumption)

→ Identifications

→ Does not incorporate risk

→ ignores probability

no space for probabilities

↳ chance %

Risk and uncertaintyProbability Analysis

A probability analysis of expected cashflows can be used both to calculate an expected NPV and to measure risk.

Steps

→ Calculate expected value of NPV

→ multiple outcomes will be considered by student.

→ Measure risk,

↳ by calculating the worst possible outcome and its probability

↳ by calculating the project will fail to achieve positive NPV

↳ by calculating the standard deviation of NPV

Expected Value

→ Considering multiple outcomes with different probability
Weighted average as long term average provided once and one again.

Usefulness of EV

→ Relatively small and easy

→ Decision focused and lead you towards decision

→ estimates to be done on reasonable basis.

↳ justified with appropriate currency - key cost of no use.

Eg
The company has calculate following NPV depending on market conditions - Good market NPV 20000 having following probability of 50%. Moderate market NPV 15000 having following probability of 30%. Poor market NPV 10000 and following probability of 20%. Calculate NPV of EV.

$$EV = \text{Outcome} \times \text{Probability}$$

Good	= 20000	\times	50% = 10000
Moderate	= 15000	\times	30% = 4500
Poor	= 10000	\times	20% = 2000
			<u>2</u>
			<u>EV</u> <u>16500</u>

log turn Averge value of project

Extract of Project page

There is some uncertainty about what price can be charged for the units produced by the investment project, as this is expected to depend on the future state of the economy. The following forecast of selling prices and their probabilities has been prepared:

Future economic state	Weak	Medium	Strong	total EV
Probability of future economic state	35%	50%	15%	100%
Selling price in current price terms	\$25 per unit	\$30 per unit	\$35 per unit	Simple

These selling prices are expected to be subject to annual inflation of 4% per year, regardless of which economic state prevails in the future.

Forecast sales and production volumes, and total nominal variable costs, have already been forecast, as follows:

Year	1	2	3	4
Sales and production (units)	150,000	250,000	400,000	300,000
Nominal variable cost (\$'000)	2,385	4,200	7,080	5,730

Incremental overheads of \$400,000 per year in current price terms will also be required.

$$EV = \text{outcome} \times \text{Probability}$$

w = 25	\times	35% = 8.75	[]	example of calc PES / APM
m = 30	\times	50% = 15		part page
s = 35	\times	15% = 5.25		29

Advantages

→ Does incorporates risk

→ Decision makes, Probability

Disadvantages

→ Probability are estimates
judgement, can be questionable

→ one off decision

2 The Superior Software House (SSH) commenced trading on 1 December 2002 in the country of Bonlandia. SSH develops bespoke software packages on behalf of clients. When requested to do so, SSH also provides training to clients' staff in the use of these software packages. On 1 December 2006, the directors of SSH established a similar semi-autonomous operation in Karendia. All software packages are produced in Bonlandia and transferred to Karendia at cost plus attributable overheads i.e. there is no mark-up on the software packages transferred from Bonlandia to Karendia.

Karendia is a country in which the structure of industry has changed during recent years. There has been a major shift from traditional manufacturing businesses to service orientated businesses which place a far greater emphasis upon the use of business software.

The operational managers in both Bonlandia and Karendia have no control over company policies in respect of acquisitions and financing.

The operational manager of Bonlandia receives a bonus of 40% of his basic salary for meeting all client delivery deadlines in respect of Karendia. At a recent meeting he instructed his staff to 'install client software by the due date and we'll worry about fixing any software problems after it's been installed. After all, we always fix software problems eventually'. He also stated that 'it is of vital importance that we grow our revenues in Karendia as quickly as possible. Our clients in Karendia might complain but they have spent a lot of money on our software products and will not be able to go to any of our competitors once we have installed our software as all their businesses would suffer huge disruption'.

Financial data (all stated on an actual basis) in respect of the two divisions for the two years ended 30 November 2007 and 2008 are shown on the next page:

Summary Income Statements:

	Bonlandia	Karendia	Combined	Bonlandia	Karendia	Combined
2008	\$'000	\$'000	\$'000	2007	\$'000	\$'000
Revenue	14,600	2,800	17,400	14,000	2,000	16,000
Salaries	4,340	1,248	5,588	4,000	1,200	5,200
Software & consumables	2,040	486	2,526	2,000	450	2,450
Other operating costs	2,880	654	3,534	2,800	600	3,400
	9,260	2,388	11,648	8,800	2,250	11,050
Marketing	2,392	600	2,992	2,100	400	2,500
Interest (Group)	400	850	900	400	100	500
Depreciation and amortisation	2,792	760	4,402	2,500	500	3,900
Total costs	12,052	3,148	16,050	11,300	2,750	14,950
Profit/(loss) for the period	2,548	(348)	1,350	2,700	(750)	1,050

Statements of financial position:

	Bonlandia	Karendia	Combined	Bonlandia	Karendia	Combined
2008	\$'000	\$'000	\$'000	2007	\$'000	\$'000
Assets						
Non-current assets	9,000	1,600	10,600	8,000	1,000	9,000
Current assets	4,550	1,000	5,550	5,000	800	5,800
Total assets	13,550	2,600	16,150	13,000	1,800	14,800
Equity and liabilities						
Share capital and reserves				9,150		7,800
Non-current liabilities						
Long-term borrowings (Group)				4,000		4,500
Current liabilities	2,400	600	3,000	2,000	500	2,500
Total equity and liabilities	16,150					14,800

Required:

- Completely Divisions
- Assess the financial performance of SSH and its operations in Bonlandia and Karendia during the years ended 30 November 2007 and 2008.
 - Discuss the statements of the operational manager of Bonlandia and assess their implications for SSH.
 - Assess the likely criteria which would need to be satisfied for software to be regarded as 'quality software'.
 - Suggest a set of SIX performance measures which the directors of SSH could use in order to assess the quality of service provided to its clients.
- Note: you should highlight additional information that would be required in order to provide a more comprehensive assessment of the financial performance of each operation. (14 marks)
- (4 marks)
- (4 marks)
- (3 marks)
- (25 marks)

→ Calculating ratio's Basic + ratios made

↳ one that you made

→ Consider whether issued or claimed

→ Explain the reason → why?

→ Give your conclusion

↓

Ratios	Bonlandia	Karendia	Group
1. Sales growth	0.8	0.7	0.8
% inc in Cost	6.65%	-	10.1%
ROCE	22.85%	24.5%	(57.6%)
Asset turnover	1.81	1.27	1.4
OP margin	17.45%	14.28%	(24.2%)
C.R.	1.9	2.5	1.67
int force			2.01
EBITDA			2760
Sales			2450

Sales

The main reason for which an increase is because of the growth in sales by 40% from last year for Karendia which seems quite impressive - and also indicates shift from traditional manufacturing to service provided good for long term. However, the sales growth in Bonlandia was 13% which is the size of division.

ROE

Although, the income is minus at young rock, but main reason of ROCE increase seems to be from kensalda's profit but still in negative. The reason of kensalda's such increase in ROCE is derived from margin which has also increased. However, asset turnover has an adverse impact on ROCE which decreased by 0.13 times from last year, but acceptable as kensalda's operation are recently established. New investment would take time to realize. Assets increased by 44.1% compared to last year in sales.

The ROCE of banklandia affected the young Rock adversely as it decreased from 20.1% to 22.8%, mainly due to decline in operating profit margin which decreased by approx 2%. This seems because of last increased by 6.65% as compared to 4.1% increase in sales. Asset turnover improved, so assets are old enough to generate sales. But change in asset turnover is a minor one indicating slow growth in sales possibly due to high concentration in banklandia. Assets have increased by 42%, whereas sales have increased by 41%.

Current Ratio

The main reason of such a decrease is a decrease in current section of banklandia by 0.6% because increase in current liability and decrease in current assets. On the other hand, the current ratio of kensalda improved slightly because of increase current assets by 20% with 20% increase in liabilities.

Acres

The reason for such a decrease is because of increase in equity financing by 17% approx. and decrease in debt by \$100 also lead towards gearing.

Int Cover

Increase in int cover is because decrease in finance cost due to repayment of long term loans and increase in earnings profit from last year - Sales growth was higher than

Cost growth led high profit and int lower.

Tip

any profit figure we have forecast, make sure you read the explanation of that forecast. (this section points) → Advanced candidate can be added to analyse these points

→ Additional Performance measures
→ EBITDA
→ NPV → (mainly NPV is complex than APM)
Advise C, In APM, it more descriptive rather calculating.

→ IRR → Adv 1 discadv
→ Modified internal rate of return (MIRR)
not covered
→ Non financial performance indicators
→ difference between performance management & performance measurement

Note

Aim → calculation expertise
In APM, discussion from the business consultants is focused with calculation, but to discuss a particular case there should be strong grip on calculation.

EBITDA Earnings before int and tax excluding
↓
why we need EBITDA → add back dep/amortisation
→ sometimes organisations have higher dep/amort due to heavy machinery, heavy plants - EBIT would not be an accurate reflection of performance. (EBIT / operating profit will have dep/amortisation been deducted)

You get accurate performance of your business.

→ key performance indicators

EBIT / operating result =

add back

Depreciation + xxx

Amortisation + xxx

EBITDA l

Net income = xxx

add back

+ Depreciation = xx

+ Amortisation = xx

int & tax xx
EBITDA

Advantages

→ Substitute of cashflow, seems to be more accurate reflection of an business. (non cash expenses have been added)

→ ideally your options should be robust well
→ non equity external cost → (int & tax), add back now EBITDA gives an performance of options
↳ EBITDA can be termed as a good indicator of optional performance.

→ Control major decisions → business potential

↳ expanding your products/markets
↳ business performance can be monitored through EBITDA, you can decide whether we have to expand in some business or not.

Net present value → (NPV) Complexity of NPVs are tested in APM

→ Decision limit of NPV are tested in APM.

→ PV of all cash inflows less the PV of all cash outflows. (Sum it all)

→ basic NPV calc question

Ex. The following are the cashflows

Yr 1	\$1000	Invest in year 0		
Yr 2	\$1000	will be 11000		
Yr 3	3000	recovered		
Yr 4	3000	NPV		
0	1	2	3	4

Invest in	(11000)				
CF's	1000	1000	3000	3000	
NPV's	(11000)	5000	5000	3000	2000
DF	0.909	0.909	0.751	0.683	
1/(1+0.1)	0.909	0.909	0.751	0.683	

1/(1+0.1)	0.909	0.909	0.751	0.683
NPV =	1977	4130	2253	2049

NPV is +ve 1977 → accept the project

NPV is -ve 1977 → reject the project

NPV is 0 → dual consider other factors

↳ location diversification

you are not adding value currently. customer etc
but can add value in future.

Advantages

→ time value of money

↳ IRR is considered so we can say that time value of money is considered)

→ Absolute measure

biz → number based rather than %

→ life of project

↳ since we have whole project life cycle considered

→ Complete cash flow potential of project

→ Cashflow based

↳ cash generation through the project

→ Profit = Cash

IRR → Internal rate of return

→ it's a rate at which NPV of a project gets 0

→ it identifies a maximum rate at which finances should be done

↳ maximum threshold that loan can be taken

$$IRR = \frac{12\%}{10\%} \rightarrow 1$$

↳ financial constraint
Cost of capital = 10%

negative
choose selection between NPV and Cost of Capital

formula

$$IRR = \frac{a + \frac{A}{B} \times (b-a)}{A-B}$$

a = rate of positive NPV

A = number of positive NPV
higher

b = rate of negative NPV

B = number of negative NPV
smaller

For IRR, you need 2 NPVs and 2 rates but in question it's only given 1. Calculate the 2nd rate & 2nd NPV by yourself)

through the relationship of COC and NPV

a = 10%

b = 15%

$$A = \frac{1000}{-100} \rightarrow 10 \quad B = \frac{-100}{-1000} \rightarrow 10$$

→ best practice is to use positive & negative but if both are +ve/-ve then higher and lower will be considered

IRR example

Investment = 1600

life = 2 years

COC = 10%

Cashflows = 1000 / year

year

IRR

↳ NPV infant 2 NPV's

0 1 2

inv

(1600)

CF's 10% 1000 1000

DF → $(\frac{1}{1+0.1})^1$ 0.909 0.826 → given in exam

PV (1600) 909 826

$$NPV = +\underline{135}$$

$$10\% \rightarrow a$$

$$B = -73$$

$$20\% \rightarrow b$$

	0	1	2
inv	(1600)		
CF's	20%	1000	1000
DF	$(\frac{1}{1+0.1})^1$	0.833	0.694
PV	(1600)	833	694

NPV -73 → B
20% b

$$IRR = \frac{a + \frac{A}{B} \times b-a}{A-B}$$

$$= 10\% + \frac{135}{135 - (-73)} + (20\% - 10\%)$$

$$10\% + 0.649 \times (10\%)$$
$$10\% + 0.0649$$

$$\boxed{IRR = 10.0649\%}$$

Advantages / Disadvantages of IRR

Adv

① Time value of money is considered

↳ discounted cashflow
↳ more sensible

② life of the project is considered

↳ whole life cycle is considered
↳ makes it more appropriate

① IRR deals in only conventional projects

0 1 2
1000 800 700

↳ (1000) → 500+

↳ these scenarios

we have only one

IRR

↳ investment +, -ve

Non Conventional Projects

0 1 2 3
1200 1100 1000

↳ (1200) 1200 (1000) 1000

↳ +200 (300) 150

↳ (1000) 1000 ↳ B.R

↳ B.R

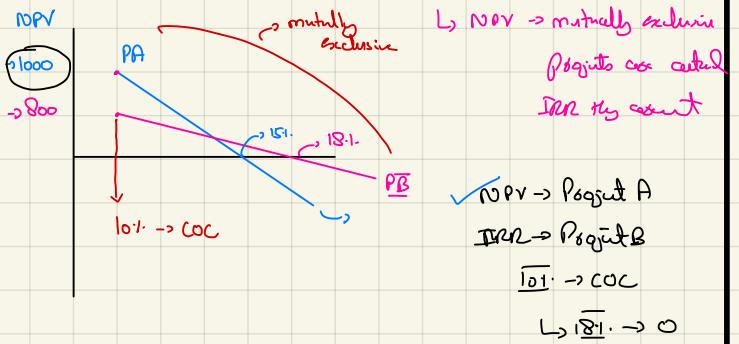
→ IRR is not an absolute measure

↳ it's in % terms

↳ NPV, we get exact figure
(IRR → 1% terms) → difficult
a figure

how much value will
be created

Fig



→ IRR is an estimate

↳ you instead % on your
wishes

→ estimates can be wrong
as well

Modified internal rate of return → non conventional
Projects.

IRR is the cosmetic measurement of NPV. This ignores
the actual returns generated by the project - MIRR can
deal with

↳ non conventional CP's

↳ scenario rates

↳ different rates

Fig

$$MIRR = \sqrt[n]{\frac{\text{terminal CashFlow}}{\text{initial outlay}}} - 1$$

Fig The following are the cashflows

$y_1 = 80,000$ - investment in year 0 will

$y_2 = 90,000$ - 100,000

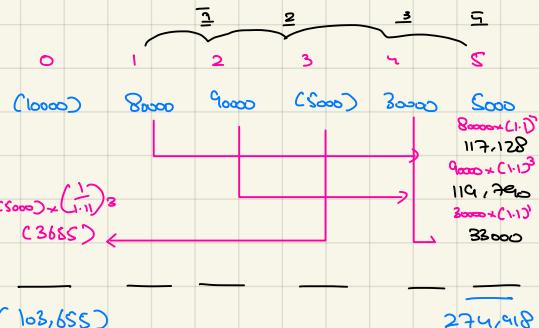
$y_3 = (-5,000)$ - ~~spent~~

$y_4 = 30,000$ - MIRR using borrowing
rate (11%) and scenario
rate 10%

$y_5 = 5,000$ - ~~spent~~ 10%

Sol

CP's



$$MIRR = \sqrt[5]{\frac{274,918}{103,655}} - 1$$

$$MIRR = 21.5\%$$

→ non conventional
Project

Non financial KPI's

↳ don't always be a financial focus person

→ CSF's

→ KPI's

Good financial
Performance

① I. ROCF
② Net profit
margin

③ Acquisition

non financial

Customer satisfaction

① % of satisfied
customers
② % of regular
customers
③ % of repeat
customers

Problems with assessing qualitative information

→ Assessing quality is not an easy task

→ Conflicts of higher management decision and consumer preferences

→ no specific formula to calculate qualitative factors

↳ tailor made solution
non financial KPI's

Performance Measurement

→ deals specifically with performance
and measures

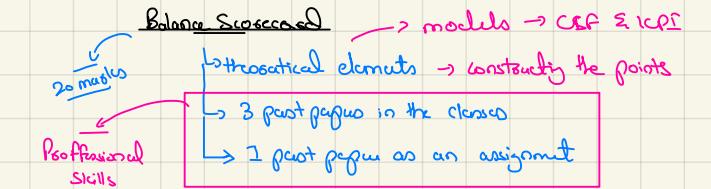
→ These are quantitative indicators
you put in place to track the
progress against your strategy

Strategic Performance Management

→ A system which ensures
that goals are consistently
being met in an effective
manner

→ An organisation, a department,
an employee, or even the process
to build a service

→ integrates organisational
strategic management performance
information, monitoring current
and future performance



In order to achieve Company vision and strategy → 4 perspectives and each of the perspective is linked with assigned goals and KPI's

Kaplan & Norton → performance of 60
→ developed Balance score

Perspectives → Developed by this model

→ Financial Perspective

→ Customer Perspective

→ Internal Perspective

→ Innovation and Learning

→ 3 heads forming non financial performance indicators

Financial Perspective (CFPI's)

→ adding shareholders value

→ improving the finance

Customer Perspective (COPPI)

→ adding customer value

CSF / Goals KPI's / Measures

→ Profit ROCE / CIP margin

→ Survival liquidity

(enough funds)

CSF / Goals KPI's / Measures

→ Quality

% of complaints
% of return orders

→ Responsiveness % of time delivery

Internal Perspective (INPPIS)

→ process of an organisation are efficient or not

CSF / Goals KPI's / Measures

→ operational performance

Cycle time (lead)

CSF / Goals KPI's / Measures

→ new products

no of new products

when an entity receives order

↓

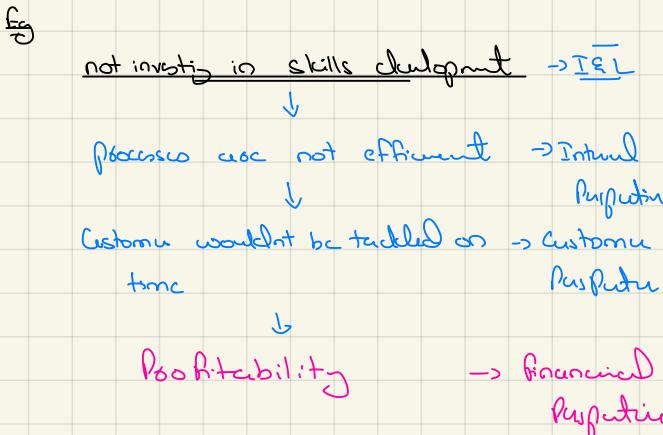
when it's delivered

↓

staff develop training cost

% of training offered

→ all those perspectives are interrelated with each other.



Implementation of Balance Scorecard

Develop strategy → Cost produce as differentiator

Select measures → Right measures or right goals (but perhaps cumulative)

Define and refine → Management reporting system tracks

Report against performance

Deal with people → Reward & career development

Disadvantages

→ Conflicting measures

→ entity wants CIP margin increase and customer wants good quality - Good quality can be expensive material that lead to lower margins

→ selection of measure

→ selecting a measure for any particular strategy is not easy

→ Interpretation and action

→ determination of correct interpretation is not easy

Management Commitment

- observed that management commitment towards the others 3 perspectives lacks focus
- primarily profit / financial are somethings work for in the eye of senior management

→ Professional skills

Section A - BOTH questions are compulsory and MUST be attempted → absolute, read examining as well.

1 The Royal Laurel Hospital (RLH) and The King Hardy Hospital (KHH) are government funded institutions which are managed by the Glasburgh Trust. The following information is available for the year ended 31 May 2009.

	RLH Actual	RLH Budget	KHH Actual
Total inpatients	37,000	36,500	40,000
Number of inpatients waiting > 5 weeks for admission	3,330	365	326
Number of inpatients waiting > 11 weeks for admission	740	0	0
Total outpatients	44,000	43,800	44,000
Number of outpatients waiting > 5 weeks for treatment	4,400	2,190	352
Number of outpatients waiting > 11 weeks for treatment	1,320	438	220
Achievement (% of target maximum waiting time of 2 weeks for admission) (%)	70	38	100
Number of emergency admissions	300	400	300
Achievement (% of target of 4 hours or less time spent in accident and Emergency ward)	96	98	100
Number of complaints received	1,620	803	420
Number of complaints responded to within 25 days	1,539	803	416
Number of deaths (all inpatients)	600	730	800
Infection control - number of instances of infections reported	2	6	0
Number of drug administration errors	80	100	20
Number of staff shortages	80	50	20
Staff productivity measure (number of patient days per staff member)	8.4	7.4	9.2
Number of times of Government or agency staff usage	60	60	20
Bad debts (percentage of inpatient bed days)	138,750	146,600	134,320
Theatre utilisation (%)	80%	80%	80%
% of inpatients requiring a single operation	80%	80%	80%
Number of operations performed	29,008	?	31,840
Medical staff costs (\$m)	54.2	55.2	60.2
Other staff costs (\$m)	22.0	22.2	4.0
Income and expenditure surplus margin	5.5	5.5	4.0
Number of days cash in hand	(1.0)	0.0	3.5
Additional information:			
(1) Both hospitals were in operation for 365 days during the year.			2617
(2) Each hospital has 42 wards, each of which accommodates 10 beds			100
(3) RLH budgeted that each inpatient would require a stay of four days and nights in hospital.			90
(4) Each hospital has ten operating theatres in each of which an average of nine operations per day were undertaken.			365 days
(5) No outpatient required an operation during the year.			→ 9 operations
(6) The management of the trust uses a 'balanced scorecard' approach in order to assess the performance of each hospital. Their balanced scorecard has four dimensions which are as follows:			
(i) Access to services ✓			
(ii) Clinical			
(iii) Efficiency			
(iv) Financial management.			

→ we have seen these perspectives
beginning in an industry

$$\text{Required: } \frac{\text{RLH}}{\text{KHH}} = \frac{24,008}{10,910} = 88.31$$

Prepare a report to the management of the Glasburgh Trust which: $\text{RLH} = \text{KHH}$ $\frac{31,840}{10,910} = 29.1$

(a) Critically assesses, on the basis of the above information, the performance of both hospitals for the year ended 31 May 2009. You should use the four dimensions to perform your assessment as per note (6) above; (20 marks)

(b) Evaluates the balanced scorecard used by the Glasburgh Trust and provides recommendations which would improve its usefulness as a performance measurement tool. (11 marks)

4 professional marks will be awarded in question 1 for the appropriateness of the format and presentation of the report and the quality of its content. (4 marks)

→ drafting skills in your blood

(35 marks)

RH

→ Access to Services

<u>RH</u>	<u>RH</u>	<u>KHH</u>
Actual	Budget	Actual

% of inpatients who waited more than five weeks ✓

9.1.	11.1.	0.81. ✓
2.1.	0	0

% of inpatients who waited more than eleven weeks ✓

% of outpatients who waited more than five weeks

10.1.	5.1.	0.81. ✓
3.1.	1.1.	0.51. ✓
0.51.	-	- ✓

% of outpatient who waited more than eleven weeks

% of outpatient who waited more than thirteen weeks



→ professional tone → Skill questions will be done

The statistics in respect of inpatients to each hospital reveal that KHH provided superior access to service than RH. At RH 9.1% patients waited for more than five weeks and 2.1% patients had to wait for more than 11 weeks. Both which are poorer to its own budget and cognititors.

As for outpatient again, the KHH was far better in appointment the RH. The RH didn't even meet the budget 10.1% of all outpatients who waited more than five weeks for an

appointment at RH which was exactly twice the target of 5.1%. Also, 3.1% of all outpatients at RH waited more than 11 weeks for an appointment against a target of 1.1%. Moreover, 0.51% outpatients at RH had to wait more than 13 weeks for an appointment.

The RH emergency admissions were same as KHH but it was below the target of 400 admissions.

RH had targeted that no patient admitted to hospital on emergency basis would have to spend 12 hours before being admitted to hospital but actual number suggest poor performance compared to budget and the cognititors who had no patient who had to wait 12 hours before allocated an hospital bed.

RH was unable to meet the target of 98.1% patients admitted to the accident and emergency ward would spend less than four hours in the ward - RH achieved a percentage of 96.1% whereas cognititors achieved 100.1%

Clinical

<u>RH</u>	<u>RH</u>	<u>KHH</u>
Actual	Budget	Actual

number of Complaints

1620

803

420

number of deaths (inpatient)

600

730

800

infusion control

2

6

0

number of day adm cases

80

100

20

The RH the complaints (complaints clinical) were more than double compared to budget and almost 4 times greater when compared to KHH - indicating poor customer satisfaction.

→ The death rate of KHH is higher than RH but solving this with clinical efficiency might be justified as death depends more on the seriousness of the illness.

→ The team was excellent in infection control cases. RH actual performance was good compared to the nine instances as we set in the budget.

→ KHH performance is commendable in doing adm cases as they have done only 20 cases in respect to RH they have done 80 cases which are about from the target that anticipated less cases.

Efficiency

<u>RH</u>	<u>RH</u>	<u>KHH</u>
Actual	Budget	Actual

number of patients days per member
of medical staff

8.4

7.4

9.2

number of times of government
to agency staff

80

60

20

number of staff shortages

80

60

20

tailored model (PPI)
per patient day

3.75

4

3.33

tailored model (PPI)
per patient day

138750 / 23000

146000 / 36500

138250 / 12000

% of complaints responded within
25 days

95.1.

100.1.

99.1.

→ As for staff productivity, comparative actual and target statistics for RH are 8.4 and 7.4 days respectively, KHH has a higher figure at 9.2 patient days per member of medical staff implies greater level of efficiency.

Against the number of staff shortages of 80 at RHM who was twice higher than that of KHM it is reasonable to conclude that such staff shortages will lead to problems especially within organisation such as hospitals which are so dependant upon staff being available according to hospital schedule.

The average patient stay at RHM was 3.75 bed night which compares favourably with a target of 4 bed night - KHM had an average patient stay of 3.66.

There's utilisation at RHM amounted to 88.3% of available capacity which was below the target level of 88.9%. In comparison with KHM used 96.4% of available capacity which is significantly higher than RHM.

The RHM was only 95% in operating margins with 23 days successfull when compared with budget of 20 days again in this aspect KHM were better the RHM.

Financial

	RHM	RHM	KHM
	Actual	Budget	Actual
Revenue from clinical & non-clinical activities	£12.4	£12.2	£10.2
Medical staff cost	22.3	22.2	19.6
Other staff cost	£5.5	£5	£4.0
Operating cost	27.8	27.7	23.6
Income / expenditure surplus/deficit	-1	0	4
Number of days cash in hand	31	20	25

The financial information contained within the scenario is extremely limited, however it can be deduced that RHM had a deficit of £1 million - it was targeted to operate at 0 surplus / deficit other than with regard to medical staff cost were 0.1m above budget. RHM appears to have excellent cost control given that it treated more outpatients but with lesser staff cost. This shows good control over cost.

In comparison, KHM had an operating surplus of £4 million it is noticeable that its level of operating cost 23.6 is lower than RHM. Cash in hand days at RHM are 31 days which is a day above target - KHM had 25 days in cash in hand.

Conclusion

RHM performance was well below than KHM and also in many areas it was behind its own budget.

30 Victoria-Yeeland Logistics (June 2015, amended)

49 mins

Exhibit 1: Company background and objectives

→ detail of the industry

Victoria-Yeeland Logistics (Victoria) is a logistics support business, which operates a fleet of lorries to deliver packages of goods on behalf of its customers within the country of Yeeland. Victoria collects packages from its customers' manufacturing sites or from the customers' port of importation and delivers to the final user of the goods. The lorries are run and maintained from a set of depots spread throughout Yeeland.

The overall objective of Victoria is to maximise shareholder wealth. The delivery business in Yeeland is dominated by two international companies and one other domestic business and profit margins are extremely tight. The market is saturated by these large operators and a number of smaller operators. The cost base of Victoria is dominated by staff and fuel, with fuel prices being highly volatile in the last few years.

Exhibit 2: Balanced scorecard

→ major cost
staff < fuel

In order to improve performance measurement and management at Victoria, the chief financial officer (CFO) plans to use the balanced scorecard (BSC). However, they have been pulled away from this project in order to deal with an issue with refinancing the business's principal lending facility.

The CFO has already identified some suitable metrics but needs you, as their assistant, to complete their work and address any potential questions which might arise when they make their presentation on the BSC to the board. The CFO has completed the identification of metrics for three of the perspectives (Appendix) but has yet to complete the work on the metrics for the customer perspective. This should be done using the data given in Appendix 2.

Therefore the CFO has requested a justified recommendation, and calculation, of a suitable performance metric for each customer perspective success factor. The CFO also wants a commentary on the problems of using customer complaints to measure whether packages are delivered safely and on time. ↗ Customer perspective efficiency

Exhibit 3: Reward management issues

Additionally, two issues have arisen in the reward management system at Victoria, one in relation to senior management and the other for operational managers. Currently, senior management gets a fixed salary supplemented by an annual bonus awarded by the board. Shareholders have been complaining that these bonuses are not suitable. The operational managers also get bonuses based on their performance as assessed by their management superiors. The operational managers are unhappy with the system. In order to address this, it has been suggested that they should be involved in bonus target setting as otherwise there is a sense of demotivation from such a system.

The CFO wants an evaluation of this system of rewards in light of the introduction of the BSC and best practice.

Exhibit 4: Appendix 1

Financial perspective (How do we appear to our shareholders?)

Return on capital employed

Profit margin

Revenue growth

Customer perspective (How do we appear to our customers?)

Success factors:

Ability to meet customers' transport needs

Ability to deliver packages quickly

Ability to deliver packages on time

Ability to deliver packages safely

Internal process perspective (What business processes must excel?)

Time taken to load and unload

Lorry capacity utilisation

Learning and growth perspective (How do we sustain and improve our ability to grow?)

Leadership competence (qualitative judgement)

Training days per employee

Exhibit 5: Appendix 2

The process: A customer makes a transport request for a package to be collected and delivered to a given destination. The customer is supplied with a time window in which the delivery will occur. Packages are then loaded onto lorries and delivered according to a route specified by the depot's routing manager.

Total number of customer transport requests	610,000
Total number of packages transported	548,000
Total number of lorry journeys	73,000
Total package kilometres	65,760,000
Total package minutes	131,520,000
Number of delivery complaints from customers:	
from damaged packages	8,220
from late delivery (outside agreed time window)	21,920

Notes

1 All figures are for the last financial year.

2 A package kilometre is defined as a kilometre travelled by one package.

3 A package minute is defined as a minute spent in transit by one package.

Required

Respond to the CFO's requests for work on the following areas:

- Performance metrics for each customer perspective success factor and comments on using customer complaints. ↗ Calculatory (11 marks)
- Reward management issues. ↗ Calculatory (9 marks)

Professional marks will be awarded for the demonstration of skill in analysis and evaluation, scepticism and commercial acumen in your answer.

→ Point two student can draft (5 marks)

Total = 25 marks

Chatty soundin formal professional skills ↗ (5 marks)

Performance Measures

Verb - Justified Recommendation -Object - Suitable performance metric for each customer success factor

Verb - Calculate -Object - Suitable performance metric for each customer success factor

Ability to meet customer transport need

% customer request fulfilled - $548000/610000 * 100 = 89.8\%$ (1m)

This measure will focus on whether the company was able to cater to maximum customer request or not in this competitive environment. (1m)

Ability to delivery quickly

Time taken per KM - $131520000/65760000 = 2\text{min} / \text{KM}$ - This will measure the speed with which the packages have been delivered considering the time and Km.

*→ squat that we are offering
→ high → customer
Suggest customer profit*

Ability to delivery on time

% late deliveries - $21920/548000 = 4\%$ - This will measure the C's ability to deliver packages on time to customers which is important for customer satisfaction.

Ability to delivery safely

% of packages damaged deliveries - $8220/548000 = 1.5\%$ - This will help to measure how safely the deliveries were made to customers or in other words it will measure the deliveries not made safely which will affect the customer satisfaction.

Verb- Commentary Object - Problems on using customer complains (Safety and on time)

- Unjustified complains - Overstate the indicators - Refunds or some the financial benefit - Wrong performance assessment will be made about company as it will show adverse performance.

- Customers not willing to complains (less value or they think nothing will be done) this will understate the issues - indicator will show positive and wrong assessment.

Part B

Verb - Evaluation - Object Systems of rewards in light BSC and best practice

Senior Management 4.5

*→ apply Balance Scorecard → evaluating the future
good
measures
for
bonus
These measure will limit the managers performance.
→ useful tool now to give*

Operational Managers 4.5

→ Pointers

- Issue is operational managers not happy -
- May be due to things not clear and high targets
- BSC will links the strategic performance and objectives with operational performance and objectives - So measures for these will come from (*Customer and internal perspective*) *→ manager* *↳ link with this function with customer perspective*
- So strategic and operational measures will be properly aligned.
- Operational manager should not be allowed to be part of target settings however, complete clear communication needs to be made as to *what and why the targets have been set*.
- Getting their confidence is important.

↳ manager are demotivated, they might not work accordingly and business would suffer.

- Strategy* *→ BSC → reflecting future first → link scenario*
- theoretically explain model* *→ coincide they less*
- Evaluate or Assess performance with or without model* *↳ no model* *↓ customer is quiet*
- Connect on performance system*

key *↳ Performance system*

→ Suggest important in relation to performance measurement system as business performance

H.W

Section B - BOTH questions are compulsory and MUST be attempted

2 Company information

Veyatie is a fashion clothing retailer which caters for both male and female customers of all adult age groups. Veyatie has 10 retail stores. The company's information systems are basic for a business of its size and focus solely on financial information.

Veyatie's strategic objectives are 'To maximise shareholder wealth by increasing the number of retail stores, making our customers completely satisfied, ensuring our stores are attractive and offering the widest range of fashion clothing in our market.'

The Veyatie board has seen little need for non-financial performance indicators (NFPIs) so far, preferring instead to focus attention on cost control and working capital management. As a result, all senior managers are appraised against targets for operating profit margin, inventory turnover and the current ratio.

Customer satisfaction

Following a period of poor financial performance, Veyatie began collecting data on one aspect of non-financial performance, customer satisfaction, as the board had been advised that this is a key driver of financial performance.

The data collection began at the start of Quarter 3 20X3 and there is now data available for two complete years (Appendix 1). Veyatie has found it difficult to interpret this qualitative data and also the trends in this data. Some board members question its usefulness and propose reverting back to reporting just the financial indicators which they are used to.

Veyatie collects this data by asking customers to rate their satisfaction with their visit to the store as they are paying for their items. The scores range from 1 (completely dissatisfied) to 5 (completely satisfied). The mean score is the performance indicator reported to the board and the senior managers. Customers are encouraged to leave a score by having their names entered into a quarterly prize draw to win tickets to major football matches, concerts and amusement parks.

Balanced scorecard

A consultant has suggested to the board that the introduction of a balanced scorecard approach may improve business performance, as Veyatie is unlikely to achieve all of its strategic objectives in the near future. The board has already heard what the benefits of the balanced scorecard are, but are sceptical about these.

The board has asked for your advice on the problems of implementing and using the balanced scorecard approach at Veyatie. One aspect of this advice should focus on the selection of suitable performance measures and the consultant has already chosen some performance measures which could be included in a balanced scorecard at Veyatie (Appendix 2). These have been provided to help you illustrate your advice on the problems of using the balanced scorecard.

Note: The board would welcome your advice on how to refine the performance measures as part of your advice on the problems of using and implementing the balanced scorecard, but does not want you to give a detailed evaluation of the advantages and disadvantages of each performance measure, or to suggest completely new measures.

Required:

It is now 1 September 20X5.

(a) Assess the difficulties in using and interpreting the customer satisfaction data at Veyatie. (10 marks)

(b) Advise the board as requested of the problems of implementing and using the balanced scorecard approach at Veyatie. (15 marks)

(25 marks)

Appendix 1

Customer satisfaction data

Percentage of customers giving customer satisfaction scores* between 1 and 5

Narrative	Score	20X3		20X4		20X5	
		Q3	Q4	Q1	Q2	Q3	Q4
Completely satisfied	5	5%	5%	50%	5%	5%	45%
Very satisfied	4	10%	5%	0%	14%	15%	5%
Satisfied	3	70%	65%	0%	56%	50%	65%
Somewhat dissatisfied	2	10%	20%	0%	20%	25%	25%
Completely dissatisfied	1	5%	5%	50%	5%	5%	45%
Mean score		3.00	2.85	3.00	2.94	2.90	2.70
						2.95	2.93

* Satisfaction scores were collected from a large number of customers when paying for their items.

Appendix 2

Perspective

Financial

Performance measure

Operating profit margin

Inventory turnover

Current ratio

Customer

Customer satisfaction

Market share

Internal business processes

Stock out percentage¹

Learning and innovation

Total employee training days²

Notes:

1. Stock out percentage is the percentage of product lines which are unavailable for sale in each store at the beginning of each trading day.
2. The human resources department already records the total number of employee training days. Employee training covers the three main areas of health and safety training, training in handling customer complaints and training staff to understand the range of products available and how to display them attractively in the store.

Section A - This ONE question is compulsory and MUST be attempted

1 **Monza Pharma** Monza is a developer and manufacturer of medical drugs, based in Beeland but selling its products all over the world. As a listed company, the overall objective of the company is to maximise the return to shareholders and it has used return on capital employed (ROCE) as its performance measure for this objective. There has often been comment at board meetings that it is good to have one, easily-understood measure for consideration.

The company has three divisions:

- the drug development division develops new drug compounds, taking these through the regulatory systems of different countries until they are approved for sale;
- the manufacturing division then makes these compounds;
- the sales division then sells them.

Monza's share price has underperformed compared to the market and the health sector in the last two years. The chief executive officer (CEO) has identified that its current performance measures are too narrow and is implementing a balanced scorecard (BSC) approach to address this problem. The current performance measures are:

- Return on capital employed
- Average cost to develop a new drug
- Revenue growth

The CEO engaged a well-known consulting firm who recommended the use of a BSC. The consultants began by agreeing with the board of Monza that the objective for the organisation's medium-term strategy was as follows:

- Create shareholder value by:
Innovating in drug development
Efficiency in drug manufacturing
Success in selling their products

The consulting firm has presented an interim report with the following proposed performance measures:

- Financial: ROCE
- Customer: Revenue growth
- Internal business process: Average cost to develop a new drug
- Learning and growth: Training days provided for employees each year

The CEO and the lead consultant have had a disagreement about the quality and cost of this work and as a result the consultants have been dismissed. The CEO has commented that the proposed measures lack insight into the business and do not appear to tackle issues at strategic, tactical and operational levels.

The CEO has decided to take this work in-house and has asked you as the performance management expert in the finance department to assist him by writing a report to the board to cover a number of areas. First, following the disagreement with the consultants, the CEO is worried that the consultants may not have been clear about the problems of using the BSC in their rush to persuade Monza to use their services.

Second, he wants you to evaluate the choice of performance measures currently used by Monza and those proposed by the consulting firm.

Third, there has been a debate at board level about how ROCE should be calculated. The marketing director stated that she was not sure what profit figure (of at least four which were available) should be used and why, especially given the large variation in result which this gives. She also wondered what the effect would be of using equity rather than all capital to calculate a return on investment. Some basic data has been provided in Appendix 1 to assist you in quantifying and evaluating these possibilities.

In addition to these concerns, the board is considering introducing a total quality management approach within Monza. Obviously, quality of output is critical in such a heavily regulated industry where the products can be a matter of life and death. There has been discussion about testing this idea within the manufacturing division. The CEO wants to understand, first, the costs associated with quality issues within that division. To aid your analysis, he has supplied some detailed information in Appendix 2. Next, the board requires an outline evaluation of how a total quality management (TQM) approach would fit within the manufacturing division.

Required:

Write a report to the board of Monza to:

(i) Assess the problems of using a balanced scorecard at Monza. (8 marks)

(ii) Evaluate the choice of the current performance measures and the consulting firm's proposed performance measures for Monza. (12 marks)

(iii) Evaluate the effect of choosing different profit and capital measurements for different measures of return on investment and recommend a suitable approach for Monza. (11 marks)

(iv) Analyse the current quality costs in the manufacturing division and then briefly discuss how implementation of total quality management would affect the division. (10 marks)

(v) Briefly advise on how the drug development division can aim to make the new information system 'lean'. (5 marks)

Professional marks will be awarded for the format, style and structure of the discussion of your answer. (4 marks)

(50 marks)

Building block model

agenda

- ↳ theoretical discussions ✓
- 2 part papers to solve in class
- assignments
- check on more part papers of building block

↳ mainly designed

→ Building block model is highly recognized in Service Sectors



evaluation of performance in service is difficult.

Characteristics of Service Sectors

↳ which distinguish Service Sectors

→ Simultaneity → Same time → Services are delivered at the same time.

→ Heterogeneity → different → Services are different every time

→ Intangibility → Services are not touchable

→ Perishability → Cannot be stored

→ No transfer of ownership ↓

↳ through these factors building block come into light

Building block → factors

- Dimensions
 - Standards]
 - Resources]
- ↳ anything can be tested

Dimensions → CSF → Critical Success Factors

Six dimensions in BB, The first two are consultants and next four are determinants

consultants

↳ determinants

① Financial performance

③ Quality ⑤ Flexibility

② Competitiveness

④ Resource utilization ⑥ Innovation

Financial performance

- It measures profitability, liquidity and capital structure

Competitiveness

- It focuses on factors which determines sales growths, market share and Co's competitive positions.

Quality

- It measures quality of a service delivered, reliability and customer feedback

Resource utilization

- It focuses on effective utilization of all resources (Capital, labour etc)

Flexibility

- It determines how much an organization is flexible, such as speed of delivery, mode of delivery, payment methods, coping with customer demands.

Innovation

- It measures the ability to innovate in terms of both innovation process and success of individuals innovation such as new products launched.

Standards

→ KPI of those dimensions 3

- Ownership
 - Achievable
 - Equity
- ↳ Considered while targeting performance
↳ performance won't be well
↳ not focusing on these standards

Ownership

It is important that employees take ownership of the standards.

Achievable

Standards that have been set shall be achievable. So to make such achievable standards it is quite clear that organization shall be considering the standards taking employees mind. (you know what they can achieve)



flexible hours → lets writing ↳ come late

Equity

Standards should be fair to all employees. Two should not be unfairness - (Gender, departmental etc)

Rewards

→ KPI's → tracks down the performance

→ Clarity

→ Motivation

→ Controllability

Clarity

Employees needs to be clear about the organization objectives and goals. On basis of those objectives, performance can be measured.

Motivation

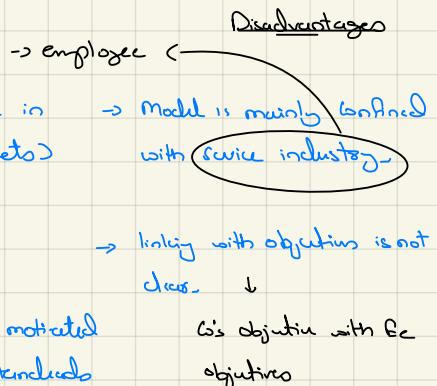
It is important to motivate the individuals to make sure that standards are achieved to get the rewards that are motivating.

Controllability

Performance of employees shall be in a controllable manner. They can control this performance and align according toward the achievement of targets.

Building block model

Advantages



→ it encourages the employee in setting standards. (buffets)
↓

high participation

Employees through this are motivated by linking rewards with standards

→ Old PP 2011

Section B - TWO questions ONLY to be attempted

3 APX Accountancy (APX) is an accountancy partnership with 12 branches covering each of the main cities of Emland. The business is well established, having organically grown over the last 40 years to become the second largest non-national practice in Emland. The accountancy market is mature and expands and contracts along with the general economic performance of Emland.

APX offers accountancy, audit, tax and business advisory services. The current business environment in Emland is dominated by a recession and the associated insolvency work is covered within the business advisory area of APX.

At present, the practice collects the following information for strategic performance evaluation:

	Audit	Tax	Business Advisory	Total	% of industry
Revenue (\$m)					
APX	69.1	89.2	64.7	223.0	
Accounting industry	557.0	573.0	462.0	1,592.0	
Change in revenue on previous year					
APX	3.0%	8.0%	22.0%	10.0%	
Accounting industry	2.5%	4.5%	16.0%	6.8%	
Profit margin at APX	6.4%	7.8%	10.5%	8.1%	→ fm
Customer service score (1 to 5 with 5 being excellent)	3.4	3.9	4.1		→ Quality
APX					

The above figures are for the most recent financial year and illustrate the metrics used by APX. Equivalent monthly figures are produced for each of the monthly partner meetings which review practice performance.

The staff are remunerated based on their grade, with non-partners obtaining a bonus of up to 10% of basic salary based on their line managers annual review. The partners receive a fixed salary with a share of profit which depends on their contractual responsibilities within the partnership.

The managing partner of APX is dissatisfied with the existing performance management system, as she is not convinced that it is helping to achieve the long-term goal of expanding and ultimately floated the business on the national stock exchange. Therefore, she has asked you to consider the impact of applying Fitzgerald and Moon's building block approach to performance management in the practice.

Required:

(a) Briefly describe Fitzgerald and Moon's building block model of performance management.

(b) Evaluate the existing performance management system at APX by applying the building block model.

→ Pros & Cons

(c) Explain the main improvements the introduction of a building block approach to performance management could provide, and suggest specific improvements to the existing system of performance measures at APX in light of the introduction of the building block model.

→ 516 good points
(14 marks)

(20 marks)

Examination
Exemplify of Past paper
"mandatory"

- Draft answer
- Exam answer
- Skills

→ linking with scenario

Building block model

This model aims to improve the performance measurement systems of service businesses such as APX. This model suggests that performance measures should be based on three concepts: dimensions, standards and rewards.

Dimensions fall into two categories: constituents and determinants. These are the areas in which performance of an organisation shall be evaluated.

Standards are targets set for the dimensions. There should be ownership of the targets assigned to staff that can be achieved possibly by getting staff involved in target setting. Standards must be achievable, usually standards should be fairly assigned based on the environment for each business unit so that injustice shall have no place.

Rewards are motivators for the employees to work towards the standards set. The reward system should be clearly understood by the staff and ensure their motivation.

b Current system of APX

→ 2 marks

APX's performance management system does not cover all the areas that all the building block model would suggest necessary. It can be seen that area of financial performance and competitiveness is covered by profit margin and market share, however, the determinants seems to be less covered by only 1 measure i.e. quality that been evaluated through customer satisfaction score.

Standards seems to be unclear, from whom performance can be measured it seems that industry average has been used as an standard but again an environment of each company can be different setting industry as the only standard can be a difficult achievement for employees.

Similarly, profit margin of industry not regional, which limits the standards set by organisation.

→ Branches of business can be seen as division would result in high business for business advisory - Company industry analysis in this division would work but for tax & audit it might be unfair as industry wouldn't be suited there.

→ The non partner reward system is limited to performance measurement by line manager which will be reviewing the dimensions. For performance, partner rewards system seems to be on contractual obligations rather than individuals contribution towards APX's success which suggest that reward level is not fairable by the partner and this may effect their motivation.

c Main building block ingredients

→ The key ingredient to be followed is to ensure the key determinants of success in performance being achieved. The other ingredient should be the target set for each measure shall be in such a way as to engage staff. Reward system should be in such a way that optimally motivate all staff members rather than individuals.

The performance measure of flexibility shall be introduced which should address the speed of delivery of service (punctuality of job delivered), customer attitude towards job completion can also help us in determination the satisfaction customer has got.

Resource utilization shall be made to ensure that all resources are effectively utilised. Dimension of resource utilization would allow to avoid idle time for resources and would help motivate staff by utilising them.

Innovation → new services → work on other aspects

→ Exam Ans of APX

3 (a) Fitzgerald and Moon's building block approach

The building block model is an analysis that aims to improve the performance measurement systems of service businesses such as APX. It suggests that the performance system should be based on three concepts of dimensions, standards and rewards.

Dimensions fall into two categories: downstream results (competitive and financial performance) and upstream determinants (quality of service, flexibility, resource utilisation and innovation) of those results. These are the areas that yield specific performance metrics for a company.

Standards are the targets set for the metrics chosen from the dimensions measured. These must be such that those being measured take ownership of them, possibly by participating in the process of setting the standard. The standard must be achievable in order to motivate the employee or partner. The standards must be fairly set, based on the environment for each business unit so that in the lower growth areas of, say, audit do not feel prejudiced when compared to the growing work in business advisory.

Rewards are the motivators for the employees to work towards the standards set. The reward system should be clearly understood by the staff and ensure their motivation. The rewards should be related to areas of responsibility that the staff member controls in order to achieve that motivation.

(b) The current system

APX's performance management system does not cover all the areas that the building block model would suggest are necessary. The downstream dimensions appear to be covered as the competitive performance (market share) and financial performance (revenue growth and profit margin) can be measured. However, the determinants of this performance appear less well covered with only the quality of service aspect handled by the customer satisfaction rating.

The standards are unclear from the information provided. It appears that the industry averages can be used to compare competitive performance but there are no figures for the industry on profitability. The measure must therefore be internal, comparing practice areas to each other. This may breach the fairness criterion as it is likely that business advisory can negotiate better fees than audit or tax due to market conditions being favourable from that area. No standard is mentioned on the document for quality of service.

The non-partner reward system at APX is related to performance as assessed by the line manager but this will be compromised by the limited measurement of the dimensions of performance. The partner reward system appears to be based on the level of responsibility of the partner and the performance of the whole firm rather than that individual's contribution to performance. Therefore, there is a strong probability that the reward level is not controllable by the partner and this may affect their motivation. For example, a tax partner may view the growth in recovery work as sufficient to merit reward to all partners and so not optimise the performance of their own area of the practice.

(c) Main building block improvements

The first improvement obtained by using this model will be to ensure that all the key determinants of success in performance are being measured. The next benefit will be that the targets set for each measure are set in such a way as to engage the staff. Finally, the reward system will operate in a way to optimally motivate the individual staff members.

Improvements to existing performance measurement system

The existing performance measurement system requires measures for flexibility which address the speed of delivery of the service (e.g. a punctuality measure of percentage of jobs delivered on time), the customer's attitude (e.g. the existing customer service survey could be broken down to include the customer's perception of whether objectives were achieved) and the degree to which the practice handles busy periods (e.g. amount of overtime worked). It is surprising that APX does not seem to measure resource utilisation, for example, by considering the percentage of billable hours worked to the total working hours of the firm. This is a commonly used measure of the productivity of staff in accounting practices. Finally, the dimension of innovation is not measured. Innovation is an important source of competitive advantage. The efficiency of the innovation process can be measured by the time it takes to launch a new service once the initial customer need is identified. The outputs of innovation process within APX could be measured by the number of new customer initiatives launched or by the revenue that they generate.

Section A – This ONE question is compulsory and MUST be attempted

Kolmog

Kolmog Hotels is a large, listed chain of branded hotels in Ostland. Its stated mission is: 'to become the No. 1 hotel chain in Ostland, building the strength of the Kolmog brand by consistently delighting customers, investing in employees, delivering innovative products/services and continuously improving performance'. The subsidiary aims of the company are to maximise shareholder value, create a culture of pride in the brand and strengthen the brand loyalty of all stakeholders.

The hotels in the Kolmog chain include a diverse range of buildings and locations serving different customer groups (large conference venues, city centre business hotels and country house hotels for holidays). For reporting purposes, the company has divided itself into the four geographical regions of Ostland as can be seen in a recent example of the strategic performance report for the company used by the board for their annual review (see appendix 1). At the operational level, each hotel manager is given an individual budget for their hotel, prepared in the finance department, and is judged by performance against budgeted profit.

Kolmog is planning a strategic change to its current business model. The board has decided to sell many of the hotels in the chain and then rent them back. This is consistent with many other hotel companies who are focusing on the management of their hotels rather than managing a large, property portfolio of hotels.

In order to assist this strategic change, the chief executive officer (CEO) is considering introducing the balanced scorecard (BSC) across Kolmog. He has tasked you, as a management accountant in the head office, with reviewing the preliminary work done on the development of the scorecard in order to ensure that it is consistent with the goal of meeting the strategic objectives of the company by tying operational and strategic performance measurement into a coherent framework.

The CEO is worried that the BSC might be perceived within the organisation as a management accounting technique that has been derived from the manufacturing sector. In order to assess its use at Kolmog, he has asked you to explain the characteristics that differentiate service businesses from manufacturing ones.

Senior executives at the head office of Kolmog have drawn up a preliminary list of perspectives and metrics as an outline of the balanced scorecard in table 1:

Table 1

Key strategic perspective

Strategic financial performance

Metric

- financial performance benchmarked to Kolmog's main competitors (share price and return on capital employed)
- customer satisfaction survey scores
- variance analysis for each hotel
- staff turnover

The history of rewards at Kolmog has not been good, with only 1% of staff receiving their maximum possible bonus in previous years and 75% of staff receiving no bonus. This has led to many complaints that targets set for the reward system are too challenging.

Under a new performance reward system, employee targets are to be derived from the above BSC strategic measures depending on the employee's area of responsibility. The new system is for hotel managers to be given challenging targets based on their hotel's performance against budgeted profit, industry wide staff turnover and the company's average customer satisfaction scores. The hotel managers will then get up to 30% of their basic salary as a bonus, based on their regional manager's assessment of their performance against these targets. The CEO wants you to use Fitzgerald and Moon's building block model to assess the new system. He is happy with the dimensions of performance but wants your comments on the standards and rewards being applied here.

Appendix 1

Strategic performance report for review

Kolmog Hotels Year to 31 Mar 2013

	East Region	West Region	North Region	South Region	Total	Total 2012	As % of revenue for 2013
	\$m	\$m	\$m	\$m	\$m	\$m	
Revenue	235	244	313	193	985	926	
Cost of sales	28	30	37	21	116	110	11.78%
Gross profit	207	214	276	172	869	816	
Staff costs	61	65	78	54	258	245	26.19%
Other operating costs							
hotels	68	70	97	54	289	270	29.34%
head office						158	150 16.04%
Operating profit	78	79	101	64	164	151	16.60%
Financing costs						78	73 7.92%
Profit before tax						86	78 8.73%
							Growth Year on Year
Capital employed					\$1,132m	\$1,065m	6.29%
EPS					\$1.36	\$1.27	7.09%
Share price					\$12.34	\$11.76	4.93%
ROCE					14.49%	14.18%	

Required:

Write a report to the CEO to:

- (i) explain the characteristics that differentiate service businesses from manufacturing ones, using Kolmog to illustrate your points; (5 marks)

- (ii) evaluate the current strategic performance report and the choice of performance metrics used (Appendix 1); (8 marks)

- (iii) evaluate the outline balanced scorecard (Table 1) at Kolmog, suggesting suitable improvements; (12 marks)

- (iv) describe the difficulties in implementing and using the balanced scorecard at Kolmog; (7 marks)

- (v) explain the purpose of setting targets which are challenging, and evaluate the standards and rewards for the hotel managers' performance reward system as requested by the CEO. (14 marks)

Professional marks will be awarded for the format, style and structure of the discussion of your answer.

(4 marks)

(50 marks)

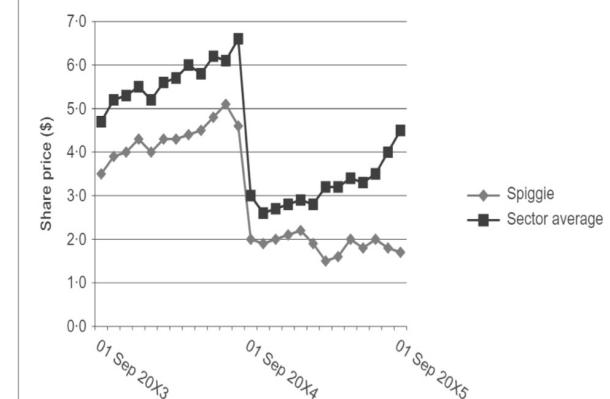
The shareholders have been told that the use of Fitzgerald and Moon's building block model for service businesses may help improve Spiggie's performance. The shareholders are not familiar with the model and have asked you, as a performance management expert, for your advice.

The shareholders want a specific explanation of each of the four determinants (quality of service, flexibility, resource utilisation and innovation) in the dimensions block and why measuring them would help to improve Spiggie's performance. Then, for each determinant, they would like you to recommend a justified performance measure.

The shareholders also believe that Spiggie's recent poor performance may be due to its reward systems. They have asked for your advice on the benefits and problems of a proposed executive share option scheme (ESOS) for the board of directors. To help you, you have been given an extract from a recent press article, which includes historical data on the share prices of Spiggie and the insurance sector average (Appendix 1).

The shareholders have been negotiating the terms of the ESOS with the board for some time. Subject to your advice, they are about to approve a deal where each director will be given an option to buy 200,000 shares in two years' time at today's market price of \$1.70 per share. In two years' time, each director can decide whether or not to exercise their share options depending upon the prevailing share price. The directors' basic salary will not change following the introduction of the ESOS.

Share price history of Spiggie and the average share price of insurance company shares on the Seeland stock exchange



More bad news for Spiggie investors

The price of shares in Spiggie has fallen for the second month in a row. A recent consumer survey voted customer service at the company's call centre the poorest in the industry. Many customers complained that they had waited up to an hour for their calls to be answered at busy times and often ended the call before the call was answered. Customers also said that call centre staff were impolite and did not take the time to fully understand what they had called about.

It is now 1 September 2015.

Respond to Spiggie's shareholders' request for work on the following areas:

(a) building block model;

(12 marks)

(b) proposed executive share option scheme (ESOS)

(8 marks)

Professional marks will be awarded for the demonstration of skill in analysis and evaluation, scepticism and commercial acumen in your answer.

(5 marks)

Performance pyramid

Dashboard

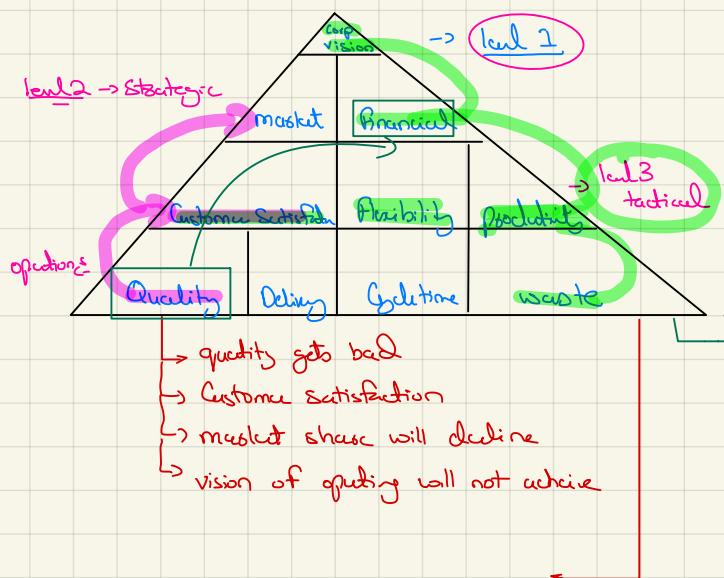
- theoretical outputs
- past papers
- other papers to be attempted
- exam answers of every question attempted

Performance Pyramid

- A tool to measure financial and non financial performance of an entity
- positive point of this tool → it considers "hierarchy"

This tool emphasizes on "Hierarchy"

Performance Pyramidal



Advantages

- it links the performance measures with organisation hierarchy thus making it possible to think the strategic vision with day to day operations.

- Each department will be involved → too much management/staff in terms of their contribution towards the organisation aim.
- time will be involved in developing measures, KSF, KPI and less time would be followed.

Note

- dont just write these adv/disadv in exam, you have to link with scenarios
- Skills → don't be drafting

- without drafting practice, APM(LPS) → cannot be cleared
- extensive drafting practice
- there case of no use if you are unable to draft these theories with linking with scenarios

- good quality products will increase customer satisfaction but on the other hand costs for quality will increase.

Disadvantages

- There may be a conflict between measures such as cost vs quality.

Performance report / Dashboard

- A report presented to audience for performance of an entity
- Some characteristics to be made sure that it is effective for the users

Purpose

- what is fundamental purpose of report?
- not by writing
- enough context in the report that it justifies the purpose

Audience

- Audience should be considered while writing the report
- words to be used for
 - BOD
 - chairman
 - Sh/s
- your report terms have considered eight arguments considering the audience.

Information

- Consideration while writing a report that what information is required.
- shouldn't be too wide info
- shouldn't be too much information provided
- specific to the point that have highlighted

Layout

- it must help users to understand the information presented and to see quickly the important amounts, trends, results and explanation.

- you can be asked

① performance report

② evaluating a performance report

①

The Better Electricals Group (BEG) which commenced trading during 2002 manufactures a range of high quality electrical appliances such as kettles, toasters and steam irons for domestic use which it sells to electrical stores in Voltland.

The directors consider that the existing product range could be extended to include industrial sized products such as high volume water boilers, high volume toasters and large steam irons for the hotel and catering industry. They recently commissioned a highly reputable market research organisation to undertake a market analysis which identified a number of significant competitors within the hotel and catering industry.

At a recent meeting of the board of directors, the marketing director proposed that BEG should make an application to gain 'platinum status' quality certification in respect of their industrial products from the Hotel and Catering Institute of Voltland in order to gain a strong competitive position. He then stressed the need to focus on increasing the effectiveness of all operations from product design to the provision of after sales services.

An analysis of financial and non-financial data relating to the application for 'platinum status' for each of the years 2011, 2012 and 2013 is contained in the appendix.

The managing director of BEG recently returned from a seminar, the subject of which was 'The Use of Cost Targets'. She then requested the management accountant of BEG to prepare a statement of total costs for the application for platinum status for each of years 2011, 2012 and 2013. She further asked that the statement detailed manufacturing cost targets and the costs of quality.

The management accountant produced the following statement of manufacturing cost targets and the costs of quality:

	2011 Forecast \$000	2012 Forecast \$000	2013 Forecast \$000
Variable manufacturing costs	8,400	10,500	12,600
Fixed manufacturing costs	3,000	3,400	3,400
Prevention costs	4,200	2,100	1,320
Appraisal costs	800	700	700
Internal failure costs	2,500	1,800	1,200
External failure costs	3,100	2,000	980
Total costs	22,000	20,500	20,200

Required:

(a) Explain how the use of cost targets could be of assistance to BEG with regard to their application for platinum status. Your answer must include commentary on the items contained in the statement of manufacturing cost targets and the costs of quality prepared by the management accountant. (8 marks)

(b) Assess the forecasted performance of BEG for the period 2011 to 2013 with reference to the application for 'platinum status' quality certification under the following headings:

- (i) Financial performance and marketing;
- (ii) External effectiveness; and
- (iii) Internal efficiency.

(12 marks)
(20 marks)

Appendix

'Platinum status' quality certification application – Relevant statistics

	2011 Forecast	2012 Forecast	2013 Forecast
Total market size (\$m)	300	320	340
BEG – sales (\$m)	24	30	36
BEG – total costs (\$m)	22	20.5	20.2
BEG – sundry statistics:			
% of products achieving design quality standards and accepted without further rectification	92	95	99
Rectification claims from customers (\$m)	0.96	0.75	0.1
Cost of after sales rectification service (\$m)	1.8	1.05	0.8
% of sales meeting planned delivery dates	88.5	95.5	99.5
Average cycle time:			
customer enquiry to product delivery (days)	49	45	40
Product enquiries not taken up by customers (% of enquiries)	10.5	6	3
Idle capacity of manufacturing staff (%)	12	6	1.5

② Cod Electrical Motors (Cod) manufactures electrical motors for some of the 24 different European domestic appliance manufacturers. Their motors are used in appliances such as washing machines and refrigerators. Cod has been in business for over 50 years and has obtained a reputation for producing reliable, low cost motors. *good entity*

Cod has recently rewritten its mission statement, which now reads:
entity

'Cod Electrical Motors is committed to providing competitively priced, high quality products, with service exceeding customer expectations. We will add value to our business relationships by investing in product development and highly trained personnel.'

The board have recognised that their existing key performance indicators (KPIs) do not capture the features of the corporate mission. They are worried that the staff see the mission statement as a public relations exercise rather than the communication of Cod's vision.

The monthly board papers contain a simple performance summary which is used as the key performance measurement system at that level.

Example of board papers for November 2011:

Cod Electrical Motors

Key performance indicators for November 2011

	This month	YTD	Comparative
Profit (\$m)	2.1	25.6	1.9
Free cashflow (\$m)	3.4	17.6	1.6
Return on capital employed (%)	12.4	11.7	11.8

Notes:

- (a) The year end is 31 December.
- (b) The comparative figure is for the same month in the previous year.
- (c) ROCE is an annualised figure.
- (d) YTD means year to date.

There are additional performance indicators not available to the board that line management use for a more detailed picture.

Additional performance information:

Activity	Note	2011	2010
No of orders	1	2,560	2,449
No of deliveries		1,588	1,660
Staff			
No of staff (FTE basis)	2	1,229	1,226
No of staff training days		2,286	1,762
No of vacant posts	3	11	17
Customers			
No of orders with a complaint	4	26	25
late delivery		39	31
product quality		21	24
customer service		52	43
other			
Preferential supplier status	5	14	12
Production			
New products			
begin in year to date	2	1	
in development at month end	4	3	
launched in year to date	1	1	
Quality			
internal failure costs (\$000)		3,480	2,766
external failure costs (\$000)		872	693

Notes:

- 1 Figures are year to date with comparatives from the previous year quoted on the same basis.
- 2 FTE = Full-time equivalent staff numbers.
- 3 Post is considered vacant if unfilled for more than four months.
- 4 Complaints are logged and classified into the four categories given when received.
- 5 Number of customers where Cod holds preferred supplier status.

Required:

③ *Assess whether the current key performance indicators (KPIs) meet the expected features of a modern performance measurement system.* (7 marks)

④ *Explain how the performance pyramid (Lynch and Cross) can help Cod's board to reach its goal of a coherent set of performance measures.* (6 marks)

⑤ *Evaluate the current system using the performance pyramid and apply the performance pyramid to Cod in order to suggest additional KPIs and a set of operational performance measures for Cod.* (12 marks)

Examine → children board segment (25 marks)

↳ theoretical aspect (20 marks)

↳ WO's paper (20 marks)

↳ appropriate pattern (20 marks)

↳ theoretical logic (20 marks)

→ signing it with scenario (20 marks)

→ pointing to the point (20 marks)

+923312623826

③ **31 Graviton (December 2013, amended)**

49 mins

Exhibit 1: Company background

Graviton Clothing (Graviton) is a listed manufacturer of clothing with a strong reputation for producing desirable, fashionable products which can attract high selling prices. The company's objective is to maximise shareholder wealth. Graviton's products are sold through its own chain of stores. Graviton's markets demand designs which are in tune with current fashion trends which can alter every few weeks. Therefore, the business's stated aim is to focus production on these changing market trends by maintaining flexibility to adapt to that market demand through close control of all stages of the supply chain (design, manufacture and distribution).

Although rapidly growing, Graviton has had some problems in the last few years which have appeared on recent internal audit reports. It was found that a senior manager at factory site 1 has been delaying invoicing for completed orders in order to ensure that profit targets are met in both the current and the next accounting period. At factory site 2, there has been excellent return on a low capital employed figure although there is a significant adverse variance in the equipment repairs account.

Exhibit 2: Performance measurement system

The chief executive officer (CEO) is unhappy with the current performance measurement system at Graviton. The system was created about five years ago by the finance director who has subsequently retired. The aim of the system was to provide the company with a list of measures which would cover performance at the strategic, tactical and operational levels of management. An example of the most recent performance report is given in Appendix 1.

Exhibit 3: Recent events

Recent press reports about Graviton have been mixed, with positive comments about the innovative new designs and much admiration over the growth of sales which the business has achieved. However, there has been some criticism from customers of the durability of Graviton's clothes and from institutional investors that the dividend growth is not strong.

The CEO believes that there are major gaps in the current list of key metrics used by Graviton.

They want you to provide an evaluation of the current system (and suggestions for improvement) using the performance pyramid of Lynch and Cross. However, they have warned you that the board wants a reasoned argument for each measure to be included in the list in order to avoid overloading each level of management with too much data.

Exhibit 4: Problems with performance measures

The board is dominated by long-serving executives who are sceptical of change, given Graviton's growth over the past three years. At a recent board meeting, they have shared the CEO's concern about data overload and also have pointed out a variety of problems with the use of performance measures including overly focussing on short-term objectives (myopia) and data manipulation (gaming). They argued that the current good performance of the business did not justify changing the performance measurement system.

The CEO needs you to assess if these problems apply to Graviton and if they do, to suggest appropriate performance management solutions to them.

Exhibit 5: Appendix 1

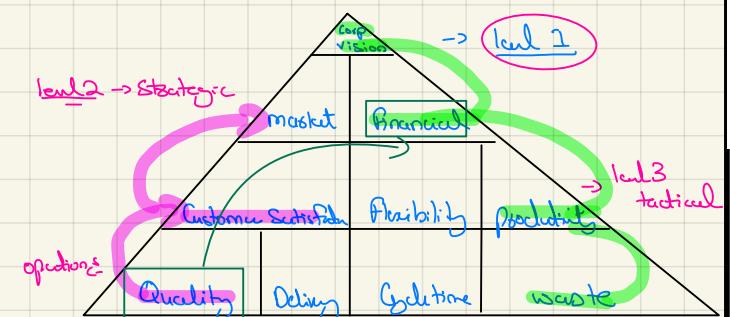
GRAVITON PERFORMANCE DASHBOARD REPORT FOR THE YEAR TO SEPTEMBER 20X3

	20X3	20X2	20X1	Change 20X3/20X2
<i>Financial</i>				
Revenue (\$m)	1,723	1,570	1,413	9.7%
Operating profit (\$m)	320	314	308	1.9%
ROCE	15.8%	15.9%	15.9%	
<i>Design</i>				
Design awards won	3	2	3	50.0%
<i>Manufacture</i>				
Average time to market (days)	22.2	22.3	22.1	-0.4%
<i>Distribution</i>				
Deliveries on time	87.0%	86.8%	87.3%	0.2%
<i>Commentary:</i>				
• The revenue growth of the business remains strong in a difficult market.				
• Return on capital employed matches the industry average of about 16%.				
• Time to market for new designs has been maintained at 22 days by paying overtime to designers in order to meet production schedules.				
<i>Required</i>				
Respond to the CEO's requests for work on the following areas:				
(a) The current performance measurement system.				(13 marks)
(b) The problems identified by the board.				(7 marks)
Professional marks will be awarded for the demonstration of skill in analysis and evaluation, and commercial acumen in your answer.				(5 marks)
				(Total = 25 marks)

- Coal → theoretical aspects
- Questions for performance measurement are:
- it should contain external as well as internal measures of performance
 - they should link with targets for employee motivation
 - flexible enough to respond to environmental change
 - should be to measure effectiveness of business and process to ensure they are meeting organisation objectives
 - they should be covering short term as well as long term goals.
- The KPI's at COO fail to have many of these key features. KPI's presented currently purely emphasise on financial performance. They don't address issues like quality, customer satisfaction, product innovation.
- Similarly, it is unclear that how these KPI's are been linked with employee motivations due to absence of information.

The current performance measurement system doesn't suit the flexibility required by the system to incorporate changes by the environment. So far this system seems to be a traditional system followed by COO.

(b)



→ The pyramid focuses on cohort set of objectives from overall corporate vision. It has range of objectives categorised in levels termed as **strategic**, **tactical** and **operational** levels. These are the measures for internal and external effectiveness.

→ Strategic level concerns related to market and financial factors which are decided by tactical management which focus customer satisfaction, flexibility and productivity. These measure reflects the business systems and helps entities like COO to give a detailed picture of performance at senior level.

→ The performance measurement system would be enhanced by application of performance pyramid and objectives of an organisation will be much more clearer for the board as well as for the manager to track down the performances.

This will help COO to achieve the coherence discussed by COO's BOD for performance measurement system.

c

↳ Exam answer

it might be a slight
more than in student
and tutor answer

(c) The driving forces, according to Lynch and Cross, that are appropriate to meeting an organisation's objectives are **customer satisfaction, flexibility and productivity**. At present COO's KPIs do not address these as they lack any mention of areas of customer satisfaction (quality and service standards), flexibility (innovation and the ability to adapt to change in the external business environment) and productivity (efficiency and waste). It could be argued that some of these are more appropriate at the tactical and operational levels of the management hierarchy but the existing measures have only a tenuous link to them and hence the board is right to be concerned by the current KPI system.

Luminous
indirect link

COO is lacking

- The additional performance information provided would allow the calculation of various indicators appropriate to these driving forces. For example:
- Customer satisfaction: Percentage of orders generating a complaint (5.4% in 2011 compared to 5.0% in 2010) measures customer satisfaction.
- Preferred supplier status (58% of market in 2011 and 50% in 2010 (if we assume that there are only 24 possible customers that offer this status)) → **would increase in supplier list**
- Flexibility: New products launched in the year (one each of 2011 and 2010) measures innovation.
- Productivity: Quality costs (\$4.35m in 2011 and \$3.46m in 2010) measures inefficient production.
- These should be added to the current KPIs used by the board.
- The operational performance measures suggested by the pyramid will involve the four areas of quality, delivery, cycle time and waste.
- Quality: The existing measures of failure costs supply a measure of quality, although variances to budget may be a more helpful presentation. The customer complaint numbers also address this issue, although they are a weak measure as no indication of the strength or ease of resolution of the complaint is given. It should be noted that the complaint category of 'other' is unacceptably large compared to the other categories and it should be broken down into further subcategories. The level of training days and long-term unfilled posts indicates the employee environment that will also impact on quality and delivery. It would be helpful to have industry benchmarks for these figures in order to understand them better.
- Delivery: The preferred customer status indicates customer satisfaction and is fed by the complaint numbers on delivery and service. As before, it is worth noting that the severity of the complaint is not being measured, for example, by discounts offered or orders lost as a result.
- Cycle time: There is no useful information currently collected to allow measurement of the cycle times of processes. Possibly the indicative numbers on products being developed may give an idea of time to market, however, an average measure of this in months would be more useful.
- Waste: No figures are collected that indicate waste in production. Variance analysis of idle time for employees and materials usage would be helpful in measuring this area.

critically diff
innovation

→ reflect on

Exhibit 1: Zones: Company Information

Zones is an overnight parcel delivery business. Since it was founded by the current CEO, it has grown rapidly due to a boom in online shopping. It now operates 1,000 delivery vehicles of various sizes. Recently, financial performance and market share have deteriorated. Zones has had no clear corporate vision, an excessive focus on financial objectives and inadequate systems to measure and manage performance of the underlying processes driving its financial performance.

Exhibit 2: Business model

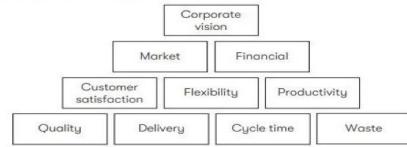
Zones' collection and delivery service uses delivery vehicles to transport parcels to and from local depots and individual addresses. Vehicles may also pick up parcels from the addressees to which they deliver. Each time the vehicle calls to pick up or deliver parcels is known as a stop, and the time of day for each stop is booked in advance. At the end of each day, vehicles, along with any parcels not delivered, return to the depot. Regardless of who pays for the service, Zones regards anyone to whom it delivers, or from whom it picks up parcels, as a customer. In the long term, the requirements of both of these groups for a competitively priced, reliable and flexible service will be similar.

Exhibit 3: Performance Improvement proposals

The CEO believes that reductions in customer satisfaction and flexibility, caused by a decline in operational performance, may have led to the recent deterioration in financial performance and market share. It has been suggested that Zones uses the Lynch and Cross performance pyramid (Appendix 1) to reverse this deterioration, and three new measures for operational performance have been suggested in Appendix 2. The CEO has stated that Zones' corporate vision should be: 'To increase shareholder wealth by becoming the leading overnight parcel delivery business, providing quality, reliability and value for customers.'

To assist with these proposals, the CEO has requested you to:

- Advise on the features of the Lynch and Cross performance pyramid that can help Zones achieve its corporate vision.
- Using the performance pyramid, evaluate the extent to which the suggested new measures in Appendix 2 can be used to measure and manage operational performance at Zones.

Exhibit 4: Appendix 1**Lynch and Cross performance pyramid****Exhibit 5: Appendix 2****Suggested new measures for operational performance**

Measure	Description
Vehicle utilisation	Average utilisation of all vehicle capacity. This is measured by taking the average of vehicle load as a percentage of capacity when the vehicle leaves the depot at the beginning of each day and the vehicle load as a percentage of capacity when the vehicle returns to the depot at the end of each day. Capacity is measured either according to the internal volume or the length of the vehicle, depending on the type of vehicle being used.
Fuel consumption	Average litres of fuel per kilometre travelled for all vehicles.
On-time stops	Percentage of stops made within 30 minutes* of the booked time.

* Zones receives complaints from customers relating to deliveries not made on time. Of these, less than 0.0001% relate to deliveries made within 30 minutes of the booked time.

Required

Respond to the CEO's requests for work on the following areas:

- (a) The Lynch and Cross performance pyramid. **(8 marks)**
- (b) The new measures in Appendix 2. **(12 marks)**

Professional marks will be awarded for the demonstration of skill in analysis and evaluation, and commercial acumen in your answer. **(5 marks)**

Performance report & dashboard**Section A – BOTH questions are compulsory and MUST be attempted**

- 1 Metis is a restaurant business in the city of Urbanton. Metis was started three years ago by three friends who met at university while doing courses in business and catering management. Initially, their aim was simply to 'make money' although they had talked about building a chain of restaurants if the first site was successful.

The three friends pooled their own capital and took out a loan from the Grand Bank in order to fit out a rented site in the city. They designed the restaurant to be light and open with a menu that reflected the most popular dishes in Urbanton regardless of any particular culinary style. The dishes were designed to be priced in the middle of the range that was common for restaurants in the city. The choice of food and drinks to offer to customers is still a group decision amongst the owners.

Other elements of the business were allocated according to each owner's qualifications and preferences. Bert Fish takes charge of all aspects of the kitchen operations while another, Sheila Plate, manages the activities in the public area such as taking reservations, serving tables and maintaining the appearance of the restaurant. The third founder, John Sum, deals with the overall business issues such as procurement, accounting and legal matters.

Competition in the restaurant business is fierce as it is easy to open a restaurant in Urbanton and there are many competitors in the city both small, single-site operations and large national chains. The current national economic environment is one of steady but unspectacular growth.

The restaurant has been running for three years and the founders have reached the point where the business seems to be profitable and self-sustaining. The restaurant is now in need of refurbishment in order to maintain its atmosphere and this has prompted the founders to consider the future of their business. John Sum has come to you as their accountant looking for advice on aspects of performance management in the business. He has supplied you with figures outlining the recent performance of the business and the forecasts for the next year (see the performance report below). This table represents the quantitative data that is available to the founders when they meet each quarter to plan any short-term projects or initiatives and also, to consider the longer-term future. Bert and Sheila have often indicated to John that they find the information daunting and difficult to understand fully.

John Sum has come to you to advise him on the performance reporting at Metis and how it could be improved. He feels that the current report is, in some ways, too complex and, in other ways, too simple. He wants to look at different methods of measuring and presenting performance to the ownership group. As a starting point, he has suggested to you that you consider measures such as NPV, EVA™, MIRR as well as the more common profit measures. John is naive and wants the NPV and MIRR to be appraised as if the business was a three-year project up to 2012 so he knows the performance of the business to date. He has requested that other calculations in your performance review should be annual based on the 2012 figures although he is aware that this may be omitting in his words 'some important detail'.

At recent meetings, Sheila has been complaining that her waiters and waitresses are not responding well to her attempts to encourage them to smile at customers although her recent drive to save electricity by getting staff to turn off unnecessary lights seems to be working. Bert stated that he was not convinced by either of Sheila's initiatives and he wants her to make sure that food is collected from the kitchen swiftly and so delivered at the right temperature to the customer's table. Also, Bert has said that he feels that too much food is becoming rotten and having to be thrown out. However, he is not sure what to do about it except make the kitchen staff go through lengthy inventory checks where they review the food held in store. John is worried about these complaints as there is now an air of tension in the owners' meetings. He has been reading various books about performance management and has come across the quote, 'What gets measured, gets done.' He believes this is true but wants to know how it might apply in the case of his business.

Metis Performance Report**Metis Restaurant**

	Year to 31 March				Latest quarter to 31 March 2012 (Q4 2012)	Previous quarter (Q3 2012)
	Actual 2010 \$	Actual 2011 \$	Actual 2012 \$	Forecast 2013 \$		
Revenue						
Food	617,198	878,220	974,610	1,062,180	85,176	321,621
Wine	127,358	181,220	201,110	219,180	38,211	66,366
Spirits	83,273	118,490	131,495	143,310	24,984	43,394
Beer	117,562	167,280	185,640	202,320	35,272	61,261
Other beverages	24,492	34,850	38,675	42,150	7,348	12,763
Outside catering	9,797	13,940	15,470	16,860	2,939	5,105
Total	979,680	1,394,000	1,547,000	1,686,000	293,930	510,510
Cost of sales						
Food	200,589	285,422	316,748	345,209	60,182	104,527
Wine	58,585	83,361	92,511	100,821	17,577	30,528
Spirits	21,651	30,807	34,189	37,261	6,496	11,283
Beer	44,673	63,566	70,543	76,882	13,403	23,279
Other beverages	3,674	5,228	5,801	6,323	1,102	1,914
Outside catering	3,135	4,461	4,950	5,395	941	1,634
Total	332,307	472,845	524,742	571,891	99,701	173,165
Gross profit	647,373	921,155	1,022,258	1,114,109	194,229	337,345
Staff costs	220,428	313,650	348,075	379,350	66,134	114,865
Other operating costs						
Marketing	25,000	10,000	12,000	20,000	3,000	3,000
Rent/mortgage	150,800	175,800	175,800	193,400	43,950	43,950
Local property tax	37,500	37,500	37,500	37,500	9,375	9,375
Insurance	5,345	5,585	5,837	6,100	1,459	1,459
Utilities	12,600	12,978	13,043	13,173	3,261	3,261
Waste removal	6,000	6,180	6,365	6,556	1,591	1,591
Equipment repairs	3,500	3,658	3,822	3,994	956	956
Depreciation	120,000	120,000	120,000	120,000	30,000	30,000
Building upgrades					150,000	
Total	360,745	371,701	374,367	550,723	93,592	93,592
Manager salary	35,000	36,225	37,494	38,806	9,373	9,373
Net profit/loss before interest and corporate taxes	31,200	199,579	262,322	145,230	25,130	119,515
Net margin	3.2%	14.3%	17.0%	8.6%	8.5%	23.4%

- Additional notes:
1. The business was founded with \$600,000 which comprised \$250,000 of equity from the founders and the remainder in a loan from Grand Bank. Under the terms of the loan, all principal is repayable in 10 years' time and interest is charged at a fixed rate of 8.4% per year.
 2. John has estimated the overall cost of capital to be 12.5%.
 3. The company earns 4.5% on any returns in its deposit account.
 4. John wishes you to use the \$600,000 original investment as the capital employed figure for analysis purposes as no new capital has been input and the owners have taken out all residual earnings so far as dividends.
 5. The corporation tax rate for Metis is 30%, paid in the same year as profits are generated. Accounting depreciation is a tax allowable cost.
 6. Marketing spending is for the short-term promotion of offers only.

Required:

Prepare a report to Mr John Sum addressing the following issues:

- (i) Critically assess the existing performance report and suggest improvements to its content and presentation; (12 marks)

(ii) Calculate and briefly evaluate

- (a) the use of John's suggested performance measures and
(b) other profit-based measures, using the most recent year's actual figures where appropriate as examples; (14 marks)

(iii) Assess how the quote 'What gets measured, gets done' could apply to Metis. (10 marks)

Professional marks will be awarded in question 1 for format, style, structure and clarity of the discussion. (4 marks)

(40 marks)

The following exhibits, available on the left-hand side of the screen, provide information relevant to the question:

1. Organisation information
2. Performance hierarchy
3. Performance dashboard
4. Benchmarking exercise
5. Project Fresh Air
6. Appendix 1 – Performance dashboard
7. Appendix 2 – Benchmarking information

This information should be used to answer the question requirement within your chosen response option(s).

Woodcote Management Services (WMS) is the waste collection and disposal management department for the Teesshire Local Government (TLG). TLG is the local government body which is tasked by the national government of Teeland with providing services, including waste management, for the region of Teesshire. The overall budget of TLG is set by the national government.

The strategy of TLG has been presented in a set of pledges to its citizens. The pledges relevant to WMS are under the over-arching heading 'maintaining and enhancing the quality of life in Teesshire'. Under this heading, TLG has then identified the following more detailed aims, to:

- Prioritise keeping public spaces clean and attractive;
- Continue to increase recycling levels and reduce the proportion of waste going to landfill dumping sites;
- Oppose the large-scale burning of organic matter.

The board of WMS has discussed this hierarchy of strategies at length and agreed the following response:

'WMS will achieve the detailed aims of TLG by being recycling friendly, winning the annual national clean region competition and instituting project Fresh Air.'

The aim of project Fresh Air is to 'oppose the large-scale burning of organic matter'. This is related to a desire to reduce air pollution and carbon dioxide emissions in line with national plans. It is planned that this project will be targeted at the farming industry in Teesshire to educate them in alternative uses for the wheat and sugar cane stubble which remains in a field after harvesting as, at present, these are commonly burnt in the field creating large, choking clouds of smoke which diffuse across the region.

The chief executive officer (CEO) of WMS has a number of concerns around performance management and has asked you, as a performance management expert, for help on some tasks.

The CEO considers himself a logical manager and so wants to be able to explain how his department's performance measurement system fits with the overall strategy of TLG. He would like you to assess how a cascade down from the mission to critical success factors (CSFs) to key performance indicators (KPIs) could be achieved at WMS.

The CEO would like you to provide an evaluation of whether WMS's current performance dashboard measures the achievement of both TLG's and WMS's detailed aims. At this stage, he has instructed you to limit your work to considering those metrics in the current dashboard. He has supplied you with a copy of the most recent performance dashboard for WMS (Appendix 1).

The CEO has collected data from other organisations (Appendix 2) and wants you to perform a benchmarking exercise using WMS's performance dashboard and the data in Appendix 2.

The details of project Fresh Air are being worked out and a budget drawn up. However, the CEO of WMS is worried about this project, as WMS has only once undertaken such a public education project, and this was about littering to the schoolchildren of Teesshire. All of this work must be done in the context of TLG being under pressure from the national government to control costs.

Currently, at TLG, all departments use incremental budgeting for most of their work as there are few dramatic changes year to year. The CEO wants to consider if this method of budgeting is appropriate for project Fresh Air. He has heard that there are alternative approaches, in particular, he was told by a fellow TLG senior manager that zero-based budgeting (ZBB) might be helpful.

The CEO would like you to explain the steps involved in ZBB highlighting the differences compared to the current budgeting system at WMS and evaluate whether WMS should change their budgeting system to ZBB for project Fresh Air.

Appendix 1

Woodcote Management Services (WMS)	Performance dashboard for year to 30 June 20X5	20X5	20X4	20X3
Frequency of waste collection (every x days) from:				
Private homes	14	14	7	
Commercial premises	7	7	7	
Waste containers on the street	14	14	7	
Volume of waste collected (in million tonnes) from:				
Private homes	1.0	1.0	0.9	
Commercial premises	1.4	1.3	1.2	
Volume of waste disposed of (in million tonnes) from:				
Landfill sites	1.9	1.9	2.0	
Recycling facilities	1.2	1.1	0.8	
Total	3.1	3.0	2.8	
Total costs of WMS (\$m) including	245	238	231	
Labour costs (\$m)	108	105	102	

Appendix 2

The CEO has obtained the following information about three organisations to help in benchmarking:

Organisation A

A is a neighbouring local government to Teesshire which has a very similar population and waste disposal needs and volumes

Organisation B

B is a local government in the neighbouring country of Veedland, both of which have strong reputations for being clean.

Organisation C

C is a multinational company based in Teeland which has multiple industrial sites and organises all of its own waste disposal.

WMS

Benchmarking comparator data (note 1)

Organisation	A	B	C
Frequency of waste collection (every x days) from:			
Private homes	7	7	NA
Commercial premises	7	7	NA
Waste containers on the street	7	7	NA
Volume of waste collected (in million tonnes) from:			
Private homes	1.0	2.2	0.0
Commercial premises	1.5	2.00	0.4
Volume of waste disposed of (in million tonnes) from:			
Landfill sites	1.5	1.3	0.1
Recycling facilities	1.6	3.0	0.3
Total	3.1	4.3	0.4
Total costs of waste management (\$m) including	322	548	55
Labour costs (\$m)	177	241	NA

Notes:

1. All data is relevant for the year to 30 June 20X5.

2. NA means not available.

It is now 1 September 20X5.

Write a report to the CEO of WMS to response to his request for work on the following areas:

(i) Performance hierarchy

(11 marks)

(ii) Performance dashboard

(8 marks)

(iii) Benchmarking exercise

(12 marks)

(iv) Project Fresh Air

(9 marks)

Professional marks will be awarded for the demonstration of skill in communication, analysis and evaluation, scepticism and commercial acumen in your answer.

(10 marks)

Budgeting

- Significant importance
in PS → 20-30%.
- Linkage of PS → good in PS I/PM

types of budgets

- Fixed budget ✓
- Flexible budget ✓
- Incremental budget ✓
- Zero based budget ✓
- Rollly budget ←
- Activity based budget ←
- ↑ raise ABC

Fixed budgets

In fixed budget, activity level never changes

→ Broad objectives (things stay the same)
→ Controlling Fixed Cost

no of units
any unit divided
it cannot be changed

Flexible budgets

In flexible budgets, activity levels can be changed

→ to compare the information with actual result

7000 units → 6000 units 7000 units

PAT \$50 \$51 'not like with like'

Incremental budgeting

→ Incremental budgeting starts with previous period budget or actual results and adds or subtracts incremental amount to cover inflation and known changes.

Suitable

→ Stable environment or economic conditions

Advantages

→ time saving → justify the increments
→ Resource conflicts → steady basis of
known conflicts previous years

Disadvantages

→ uneconomic activity
→ inefficiencies

Zero based budgets

→ this budget starts from a base of zero (no carried over from last year). Every activity which is included needs to be justified. Assumptions on each activity is been undertaken first time.

Steps

- Define Decision package
- Evaluate and rank each package → no decision to be taken.
- on the basis of ranking, allocate resources
- ↑ list decide what?

Advantages

- Staff involvement & high motivation of staff is high
- Efficient allocation
- Remove previous period problems
- more consuming activity
- Ranking of Decisions is subjective
- Skill full resources for ZBB which is costly

Disadvantages

- more consuming activity
- Ranking of Decisions is subjective
- Skill full resources for ZBB which is costly

Rolling budgets

→ Short term budgets → continuously update that

A budget prepared on short term basis as long term budgets may result in time getting consumed and incur cost as well when there are uncertain economic conditions
Rolling budgets provide short term targets to be focused on.

Advantages

- Budget will always be updated
- wastage of time and cost will be avoided

Disadvantages

- too much focus on budget may hinder actual operations

Section B - TWO questions ONLY to be attempted

2 Framiltone is a food manufacturer based in Iceland, whose objective is to maximise shareholder wealth. Framiltone has two divisions: Dairy division and Luxury division. Framiltone began manufacturing dairy foods 20 years ago and Dairy division, representing 60% of total revenue, is still the larger of Framiltone's two divisions.

Dairy division

This division manufactures cheeses and milk-based desserts. The market in Iceland for these products is saturated, with little opportunity for growth. Dairy division has, however, agreed profitable fixed price agreements to supply all the major supermarket chains in Iceland for the next three years. The division has also agreed long-term fixed volume and price contracts with suppliers of milk, which is by far the most significant raw material used by the division.

In contrast to Luxury division, Dairy division does not operate its own fleet of delivery vehicles, but instead subcontracts this to a third party distribution company. The terms of the contract provide that the distribution company can pass on some increases in fuel costs to Framiltone. These increases are capped at 0.5% annually and are agreed prior to the finalisation of each year's budget.

Production volumes have shown less than 0.5% growth over the last five years. Dairy division managers have invested in modern production plant and its production is known to be the most efficient and consistent in the industry.

Dairy division
This division was set up two years ago to provide an opportunity for growth which is absent from the dairy foods sector. Luxury division produces high quality foods using unusual, rare and expensive ingredients, many of which are imported from neighbouring Veeland. The product range changes frequently according to consumer tastes and the availability and price of ingredients. All Luxury division's products are distributed using its own fleet of delivery vehicles.

Since the company began, Framiltone has used a traditional incremental budgeting process. Annual budgets for each division are set by the company's head office after some consultation with divisional managers, who currently have little experience of setting their own budgets. Performance of each division, and of divisional managers, is appraised against these budgets. For many years, Framiltone managed to achieve the budgets set, but last year managers at Luxury division complained that they were unable to achieve their budget due to factors beyond their control. A wet growing season in Veeland had reduced the harvest of key ingredients in Luxury's products, significantly increasing their cost. As a result, revenue and gross margins fell sharply and the division failed to achieve its operating profit target for the year.

Framiltone has just appointed a new CEO at the end of Q1 of the current year. He has called you as a performance management expert for your advice.

'In my last job in the retail fashion industry, we used rolling budgets, where the annual budget was updated to reflect the results of every quarter's trading. That gives a more realistic target, providing a better basis on which to appraise divisional performance. Do you think we should use a similar system for all divisions at Framiltone? he asked.

You have obtained the current year budget for Luxury division and the division's Q1 actual trading results (Appendix 1) and notes outlining expectations of divisional key costs and revenues for the rest of the year (Appendix 2).

→ Rolling budget is always applied on Actual numbers

Appendix 1

Luxury division current year budget

CS'000	Q1	Q2	Q3	Q4	Total
Revenue	10,000	12,000	11,000	7,000	40,000
Cost of sales	(6,100)	(7,120)	(6,460)	(4,720)	(24,400)
Gross profit	3,900	4,880	4,540	2,280	15,600
Distribution costs	(600)	(720)	(660)	(420)	(2,400)
Administration costs	(2,300)	(2,300)	(2,300)	(2,300)	(9,200)
Operating profit	1,000	1,860	1,580	(440)	4,000

Q1 Actual
10,400
(6,240)
4,160
(5,624)
(2,296)
1,240

Appendix 2

Expected key costs and revenues for remainder of the current year

1. Sales volumes are expected to be 2% higher each quarter than forecast in the current budget.
2. Average selling price per unit is expected to increase by 1.5% from the beginning of Q3.
3. The exchange rate between the Icelandic Dollar (CS) and the Veeland Dollar (VS) is predicted to change at the beginning of Q2. CS1.00 buys VS1.50. For several years up to the end of Q1, CS1.00 has been equivalent to VS1.40 and this exchange rate has been used when producing the current year budget. Food produced in the luxury division is despatched immediately upon production and Framiltone holds minimal inventory. The cost of ingredients imported from Veeland represents 50% of the division's cost of sales and suppliers invoice goods in VS.
4. The rate of tax levied by the Icelandic government on the cost of fuel which luxury uses to power its fleet of delivery vehicles is due to increase from 60% which it has been for many years, to 63% at the beginning of quarter 3. 70% of the division's distribution costs are represented by the cost of fuel for delivery vehicles.
5. The CEO has initiated a programme of overhead cost reductions and savings of 2.5% from the budgeted administration costs are expected from the beginning of Q2. Q3 administration costs are expected to be a further 2.5% lower than Q2, with a further 2.5% saving to be made over the Q3 costs.

→ Rolling budget

- Required:
- Using the data in the appendices, recalculate the current year budget to the end of the current year and briefly comment on the overall impact of this on the expected operating profit for the year.
 - Evaluate whether a move from traditional incremental budgeting to a system of rolling budgets would be appropriate for Dairy and Luxury divisions.

Simply for discussion

(25 marks)

Ams framton

Recalculate the budget for luxury division for the end of current year

	<u>Q1 Actual</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>total</u>
scv	10400	12240	11388.3	7247.1	412784
Cost	(6240)	(720.2)	(6369.2)	(4653.8)	(24083.6)
C.P	4160	5220	5018	2548	16991
DC	(624)	(734.4)	(682)	(434)	(2474.4)
AC	(2296)	(2242.5)	(2186.4)	(2131.7)	(8856.6)
O.P	1240	2243	2160	27	5660

woes

	<u>Q1 Actual</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>total</u>
① scv	10400	12240	11000	7000	40,400
2: Sal volume	240	220	140	600	600
15 & P input	-	168.3	107.1	228.4	
	10400	12240	11388.3	7247.1	412784

	<u>Q1 Actual</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>total</u>
② LOS	6240	7120	6460	4720	24540
2: Sal volume	-	162.4	124.2	94.4	366
exchange rate 6.71 -	(242.2)	(219.7)	(160.6)	(622.5)	
	6240	7020.2	6369.2	4653.8	24083.6

$$* = 1 - (1.4 \cdot 1.5) = 0.067$$

$$\times 100 = 6.71.$$

Admin cost		<u>21.1.</u>	<u>25.1.</u>	<u>25.1. ^{?cofwd}</u>	
<u>Q1 Actual</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>total</u>	
original	2296	2300	2300	2300	9196
25.1. ^{Legend}	(575)	(1135)	(1683)	(3394)	
Savings	—	—	—	—	
	2296	2242.5	2186.4	2131.7	8856.6

$2300 - 575 = 2242.5$

2.5.1.

56.06

57.46

112.5

b → Single strategy

→ definitions → Rolling & measured

→ link it will scenario

Examine answer → moral price can be written.

5 of 11

(b) Incremental budgeting

Framton currently uses this type of budgeting, the starting point of which is usually the previous year's actual performance or budget. This is then updated for any known changes in costs, or for inflation. The budget would normally remain unchanged for the remainder of the year.

Incremental budgeting is suitable for use in organisations which are stable and not undergoing significant changes. This is the case for Dairy division, which operates in a saturated market and has little opportunity to grow.

Production volumes in Dairy division have only increased by 0.5% over a full five years, so it is a very stable business. Dairy division has stability of both revenues and costs. It has long-term fixed cost and volume supply agreements with its supermarket customers. It also has similar fixed contracts with its suppliers of milk, the most significant raw material ingredient used in its products.

Though the third party distribution company is able to pass on some increases in fuel costs to Dairy division, these are capped at only 0.5% per year. This is significantly less than the tax increases which will increase Luxury division's fuel costs after the start of Q3. It appears that Dairy division has relatively little exposure to rising fuel prices.

Furthermore, these increases are agreed prior to the setting of the current year budget, so there is no need to update these costs on an ongoing basis throughout the year.

As the dairy foods market is saturated and stable, there is little opportunity for the division to incur discretionary costs such as research and development of new products.

Incremental budgeting is only suitable for business where costs are already well controlled. This is because a big disadvantage of incremental budgeting is that it perpetuates inefficient activities by often simply building inflation into previous year results or budgets. It appears that Dairy division, having been in existence for a relatively long time, does have good cost control as it has modern production plant and is recognised as having the most efficient production processes in the industry.

Incremental budgeting may, however, build in budget slack. Managers may spend up to their budgeted amounts in one year, so that their budget is not cut the next, which may affect their appraisal and reward in the future. It is unclear whether this is occurring at Dairy division, though for many years (while Dairy division was the only division at Framton), the budgets set following consultation with divisional managers have just been achieved. This may be consistent with the stability of the division, but could also indicate that budgets were not set at a challenging enough level, even though Dairy division had the best performance of the two divisions last year.

It is not therefore advisable that rolling budgets are introduced in Dairy division, as the current incremental process appears satisfactory. This is especially so since divisional managers have little experience of setting their own budgets, and the time and cost of using rolling budgets would exceed the value of them to the division.

Rolling budgets

Rolling budgets are continually updated to reflect current conditions and are usually extended by budgeting for an additional period after the current period, for example, a quarter, has elapsed. That way, the budget always reflects the most up to date trading conditions and best estimates of future costs and revenues, usually for the next four quarters.

Rolling budgets are suitable for businesses which change rapidly or where it is difficult to estimate future revenues and costs.

Luxury division was only set up two years ago, and is therefore a relatively new business. It also operates in quite a different sector of the industry to that in which Dairy division operates and where Framton has most experience. There is likely to be considerable uncertainty as to future costs and revenues as Framton has little direct experience on which to base its forecasts.

Whereas Dairy division operates in a saturated and stable market, Luxury division uses rare ingredients which are subject to variations in availability and cost, for example, as a result of poor harvests. There is no indication that Luxury division has fixed price and volume contracts with its customers or suppliers and is therefore likely to suffer from instability of supply as well as demand resulting from changes in consumer tastes.

The frequent changes in the product range are also likely to make forecasting for a year ahead difficult. The fact that a large proportion of ingredients are imported from Veeland, makes costs susceptible to changes in the CS:VS exchange rates which can quickly make an annual budget out of date, though managers may use methods such as forward contracts to reduce these movements. If managers are appraised on a budget which is out of date or unrealistic, they are likely to give up trying to achieve the budget, which will negatively affect the performance of Framton.

Rolling budgets will provide a more accurate basis on which to appraise managers at Luxury division. They incorporate the best known estimates of future costs and revenues. It can be seen that the recalculation following Q1 results that Luxury division's required budget increases after the first quarter increased significantly by 42% ($5,660/4,000$), most of which is due to exchange rate changes. Where costs and revenues are likely to change during the period, rolling budgets give a much more realistic basis on which to appraise divisional performance and appraise and reward divisional managers. Budgets are likely to be achievable, which will motivate managers to try and achieve them.

Though the regular updating of the budget required in rolling budgeting is costly, time consuming and possibly a distraction for divisional managers, it does seem that rolling budgets are more suitable for Luxury division than the current incremental approach, particularly as being realistic and achievable, they will increase managers' motivation to achieve the budget and so improve the performance of the business.

③ Distribution cost

	<u>Q1 Actual</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>total</u>
original	624	720	660	120	2424
2: Sal volume	14.4	13.2	8.4	3.6	36
fuel tax 13.11 -	-	8.8	5.6	14.4	
	624	731.4	682	434	2474.4

$$23 \times 20\% = 1.311.$$

$$1601.$$

ABC → Activity Based Costing

→ modern technique to deal with OH's
→ ABC previous technique → Absorbtional Costing → allocation

F2 → theoretically
FS → question based scenario

Difference between ABC / Abs → major difference is of OH's

In ABC and absorbtional costing, material and labour is treated as same - The main difference is treatment of OH's.

Absorbtional Costing follows concept of totality i.e. Absorbtional OH's are totalled by department and then totalled OH's are divided by machine hours or labour hours. This leads to unfair allocation because some of the dept might not consume much hours or labour hours. However, In ABC, overheads are divided into cost pools - means ABC does not follow concept of totality.

Steps of Activity based Costing

- ① No totality → each OH will have separate pool.
- ② each pool will have separate cost driver → divisor
- ③ Cost pool's cost ÷ Cost driver = rate
- ④ charge rate on basis of each pool

Practice question

Q1: Suppose that Cooplan manufactures four products W, X, Y and Z. Output and cost data of the period just ended are as follows.

Products	Output units	Number of production runs in the period	Material cost per unit \$	Direct labour hours per unit	Machine hours per unit
(W)	10	2	20	1	1
(X)	10	2	80	3	3
(Y)	100	5	20	1	1
(Z)	100	5	80	3	3
		14			

Direct labour-cost per hour is \$5. Overhead costs are as follow

OH's	Short-run variable costs	Set-up costs	Production and scheduling costs	Material handling costs	Total
	3080\$		10,920\$		30,800\$
			9,100\$		
			7,700\$		
Required:					

Calculate product costs using the following approaches.

a) Absorption costing → direct labour hours

b) ABC → no of prod runs → Cost driver / Cost divisor

Q Cooplan

Absorbtional Costing

W	X	Y	Z
200	800	2000	8000
(20×10)	(80×10)	(20×100)	(80×100)
Cost/unit × units	"	"	"

	W	X	Y	Z
labours	50	150	500	1500
(1×10+5)	(3×10+5)	(1×100+5)	(3×100+5)	
hours/units	"	"	"	"
OH	700	2100	7000	21000
(70×10)	(70×30)	(70×100)	(70×300)	
Rate × hours				
PoolCost	950	3050	9500	30500

→ overhead absorption rate

$$\text{OAR} = \frac{\text{total OH}}{\text{labour hours}} = \frac{30800}{440} = 70/\text{labour}$$

Lab × unit

$$W = 1 \times 10 = 10$$

$$X = 3 \times 10 = 30$$

$$Y = 1 \times 100 = 100$$

$$Z = 3 \times 100 = 300$$

labour hours 440

	W	X	Y	Z
mat	200	800	2000	8000
lab	50	150	500	1500
OH	440	440	1100	1100
SRVC	440	440	1100	1100
SVC	1560	1560	3900	3900
PES	1300	1300	3250	3250
MHC	1100	1100	2750	2750
PoolCost	4650	5350	13500	20500

Cost pool

① Short run Variable cost

$$= \frac{3080}{14} = \frac{220}{\text{Prod sum}}$$

② Set up cost

$$\frac{10,920}{14} = \frac{780}{\text{Prod sum}}$$

③ Prod & Scheduling Cost

$$\frac{9600}{14} = 650/\text{Prod sum}$$

$$\frac{7300}{14} = 550/\text{Prod sum}$$

PM Test

4 ABKABER PLC

Abkaber plc assembles three types of motorcycle at the same factory: the 50cc Sunshine; the 250cc Roadster and the 100cc Fireball. It sells the motorcycles throughout the world. In response to market pressures Abkaber plc has invested heavily in new manufacturing technology in recent years and, as a result, has significantly reduced the size of its workforce.

Historically, the company has allocated all overhead costs using total direct labour hours, but is now considering introducing Activity Based Costing (ABC). Abkaber plc's accountant has produced the following analysis.

Annual Output (units)	Annual direct labour hours	Selling price (\$ per unit)	Raw material cost (\$ per unit)
Sunshine	2,000	200,000	4,000
Roadster	1,600	220,000	6,000
Fireball	400	80,000	9,000

The three cost drivers that generate overheads are:

- o Deliveries to retailers - the number of deliveries of motorcycles to retail showrooms.
- o Set-ups - the number of times the assembly line process is re-set to accommodate a production run of a different type of motorcycle.
- o Purchase Order - the number of purchase orders.

The annual cost driver volumes relating to each activity and for each type of motorcycle are as follows:

Product wise break-up of cost drivers	Number of deliveries to retailers	Number of set-ups	Number of purchase orders
Sunshine	100	35	400
Roadster	80	40	300
Fireball	70	25	100
	250	100	800

The annual overhead costs relating to these activities are as follows:

	\$	total
Deliveries to retailers	2,400,000	
Set-up costs	6,000,000	
Purchase orders	3,600,000	13,000,000

All direct labour is paid as \$5 per hours. The company holds no inventories.

Required:

(a) Calculate the total profit on each of Abkaber plc's three types of product using each of the following methods to attribute overheads:

(i) the existing method based upon labour hours → Absorbtional (13 marks)

(ii) activity based costing (7 marks)

(b) Explain the implications of activity based costing for Abkaber plc, and so doing evaluate the issues raised by each of the directors. (Total 20 marks)

Q Abkaber

Absorbtional Costing

Sunshine	Roadster	Fireball
800,000	960,000	360,000
(400×1000)	(600×1000)	(400×400)
1000,000	1000,000	400,000
(200,000×5)	(220,000×5)	(80,000×5)

	Sunshine	Roselene	Football
OH	4800,000	5280,000	1920,000
total cost	(24 * 200,000)	(24 * 220,000)	(24 * 80,000)
EW	6600,000	7340,000	2680,000
Profit	(4000 + 200)	(6000 + 160)	(8000 + 400)
	1400,000	2260,000	520,000

$$\rightarrow \text{OAR} = \frac{\text{total OM's}}{\text{labour hours}} = \frac{12000,00}{500,000} = 24 \text{ lab hour}$$

$$\text{lab hour} = 200000 + 220000 + 80000$$

Activity based Costing

	Sunshine	Roselene	Football
mat	800,000	960,000	360,000
lab	1000,000	1160,000	400,000

	(9600 * 100)	(9600 * 80)	(9600 + 70)
DTR	960000	768000	672000
SU	(60000 + 35)	(60000 * 40)	(60000 + 25)
MOPD	2100,000	2400,000	1500,000
Product Cost	1800,000	1350,000	450,000
Revenue	8000,000	9600,000	3200,000
Profit / (loss)	1340,000	3022000	(182000)

	① Delivery to customer	② Set up cost	③ Purchase orders
=	$\frac{2400,000}{250} = 9600 / \text{deliv to customer}$	$\frac{600,000}{100} = 6000 / \text{no of set ups}$	$\frac{3600,000}{800} = 4500 / \text{no of PO's}$
		=	

- Assignment
- Q) BH
Q) BBB → brick by brick
Q) Duff Co

Please write your answers to all parts of these questions on the lined pages within the Candidate Answer Booklet.

1. Beckley Hill (BH) is a private hospital carrying out two types of procedures on patients. Each type of procedure incurs the following direct costs:

Procedure	A	B
Surgical time and materials	1,200	2,640
Anaesthesia time and materials	800	1,620

BH currently calculates the overhead cost per procedure by taking the total overhead cost and simply dividing it by the number of procedures, then rounding the cost to the nearest 2 decimal places. Using this method, the total cost is \$2,475.85 for Procedure A and \$4,735.85 for Procedure B. -absorption answer

Recently, another local hospital has implemented activity-based costing (ABC). This has led the finance director at BH to consider whether this alternative costing technique would bring any benefit to BH. He has obtained an analysis of BH's total overheads for the last year and some additional data, all of which is shown below:

Cost	Cost driver	\$	total time	total cost of product
Administrative costs	Administrative time per procedure	1,870,160		
Nursing costs	Length of patient stay	6,215,616		
Catering costs	Number of meals	966,976		
General facility costs	Length of patient stay	8,553,600		
Total overhead costs		17,606,352		

Procedure	A	B	allocation total
No. of procedures	14,600	22,400	37,000
Administrative time per procedure (hours)	1	1.5	
Length of patient stay per procedure (hours)	24	48	
Average no. of meals Required per patient	1	4	

Required:

- (a) Calculate the full cost per procedure using activity-based costing.

- (b) Making reference to your findings in part (a), advise the finance director as to whether activity-based costing should be implemented at BH.

(4 marks)

(10 marks)

ALL FIVE questions are compulsory and MUST be attempted

PM A-2

1. Brick by Brick (BBB) is a building business that provides a range of building services to the public. Recently they have been asked to quote for garage conversions (GC) and extensions to properties (EX) and have found that they are winning fewer GC contracts than expected.

BBB has a policy to price all jobs at budgeted total cost plus 50%. Overheads are currently absorbed on a labour hour basis. BBB thinks that a switch to activity based costing (ABC) to absorb overheads would reduce the cost associated to GC and hence make them more competitive.

You are provided with the following data:

Overhead category	Annual overheads \$	Activity driver	Total number of activities per year
Supervisors	90,000	Site visits	500
Planners	70,000	Planning documents	250
Property related	240,000	Labour hours	40,000
Total	400,000		

A typical GC costs \$3,500 in materials and takes 300 labour hours to complete. A GC requires only one site visit by a supervisor and needs only one planning document to be raised. The typical EX costs \$5,000 in materials and takes 500 hours to complete. An EX requires six site visits and five planning documents. In all cases labour is paid \$15 per hour.

Required:

- a) Calculate the cost and quoted price of a GC and of an EX using labour hours to absorb the overheads.

(5 marks)

- b) Calculate the cost and the quoted price of a GC and of an EX using ABC to absorb the overheads.

(5 marks)

- c) Assuming that the cost of a GC falls by nearly 7% and the price of an EX rises by about 2% as a result of the change to ABC, suggest possible pricing strategies for the two products that BBB sells and suggest two reasons other than high prices for the current poor sales of the GC. (6 marks)

- d) One BBB manager has suggested that only marginal cost should be included in budget cost calculations as this would avoid the need for arbitrary overhead allocations to products. Briefly discuss this point of view and comment on the implication for the amount of mark-up that would be

applied to budget costs when producing quotes for jobs.

(4 marks)

(20 marks)

ALL FIVE questions are compulsory and MUST be attempted

pm A-3

1. Duff Co manufactures three products, X, Y and Z. Demand for products X and Y is relatively elastic whilst demand for product Z is relatively inelastic. Each product uses the same materials and the same type of direct labour but in different quantities. For many years, the company has been using full absorption costing and absorbing overheads on the basis of direct labour hours. Selling prices are then determined using cost plus pricing. This is common within this industry, with most competitors applying a standard mark-up.

Budgeted production and sales volumes for X, Y and Z for the next year are 20,000 units, 16,000 units and 12,000 units respectively.

The budgeted direct costs of the three products are shown below:

Product	X	Y	Z
Direct materials	\$ 25	\$ 28	\$ 22
Direct labour (\$12 per hour)	30	36	24
Op. overheads	25	35	24
	30 = 12 x hours	36 = 12 x hours	24 = 12 x hours
	2.5	3	2
	30 = 12 x hours	36 = 12 x hours	24 = 12 x hours

In the next year, Duff Co also expects to incur indirect production costs of \$1,377,400, which are analysed as follows:

Cost pools	\$	Cost drivers
Machine set up costs	280,000	Number of batches
Material ordering costs	316,000	Number of purchase orders
Machine running costs	420,000	Number of machine hours
General facility costs	361,400	Number of machine hours
	1,377,400	

The following additional data relate to each product:

Product	X	Y	Z
Batch size (units)	500	800	400
No. of purchase orders per batch	4	5	4
Machine hours per unit	1.25	1.25	1.25
	1.25	1.25	1.25

Duff Co wants to boost sales revenue in order to increase profits but its capacity to do this is limited because of its use of cost plus pricing and the application of the standard mark-up. The finance director has suggested using activity based costing (ABC) instead of full absorption costing, since this will alter the cost of the products and may therefore enable a different price to be charged.

Required:

- Calculate the budgeted full production cost per unit of each product using Duff Co's current (a) method of absorption costing. All workings should be to two decimal places.

(3 marks)

- Calculate the budgeted full production cost per unit of each product using activity based costing. (b) All workings should be to two decimal places.

(11 marks)

- Discuss the impact on the selling prices and the sales volumes of EACH PRODUCT which a (c) change to activity based costing would be expected to bring about.

(6 marks)

(20 marks)

Advantages / Disadvantages of ABC

Advantage

- It leads to fair allocation of OM's which leads in determining true profitability as OM's will be charged on their specific cost drivers rather than on machine hours or labour hours.

- Through true profitability, management would be able to take appropriate decisions regarding production and viability of product.

- ABC would allow managers to cut losses as they will be keeping a new modern technique - opportunity of employing for less environment.

Disadvantage

- ABC is a lengthy technique as multiple OH drivers are determined which consumes time.
- ABC would require staff training to get your staff trained on ABC which would require training cost which will impact entity's profit.
- initial application would require justification cost as unfamiliar staff could make mistakes. This suggest ABC might be a costly technique.
- For better comparisons, existing data will need to be reoriented on Activity based Costing for better analysis.

Q why cost/unit in both techniques differ?

→ Cost/unit in absorptional is different from cost/unit in ABC as there are different cost drivers used. In absorptional only machine hours/labour are used while as in ABC multiple cost's requires multiple drivers which would lead different allocation rate drivers in ABC. Ultimately this would result in different cost/unit in both techniques.

Q why there is sometimes very big difference in cost of ABC and absorptional and sometimes very low difference?

Whenever major OH's are divided by same cost drivers in ABC and absorptional, the cost difference will be low/small as same drivers are used in both techniques however if major OH's are divided by different cost drivers in both techniques it would lead to different apportionment of cost & would lead to higher difference in cost of both techniques.

Answer BBB

a Absorbtional Costing

	<u>GC</u>	<u>fx</u>
mat	3500	8000
lab	4500	7500
OH	(300+15)	(500+15)
	3000	5000
Cost	11000	20500
+Soli. markup	<u>x 1.5</u>	<u>1.5</u>
Price	<u>16500</u>	<u>30750</u>

→ OAR = $\frac{\text{total OH's}}{\text{lab hours}} = \frac{4000}{4000} = 10/\text{labhrs}$

b Activity Based Costing

	<u>GC</u>	<u>fx</u>
mat	3500	8000
lab	4500	7500
OH	(180+1)	(180+6)
Supervisors	180	1080
Planner	280	280+5
Proof related	180	3000
Cost	10260	20980
+Soli. markup	<u>x 1.5</u>	<u>1.5</u>
Price	<u>15390</u>	<u>31470</u>

Cost pools

① Supervisors

$$= \frac{9000}{600} = 150 \text{ / visit}$$

② Planner

$$= \frac{7000}{250} = 28 \text{ / doc}$$

③ Proof related

$$= \frac{240000}{40000} = 6 \text{ / abhrs}$$

H.W Attempt MCQ's of last from 29 to 41 → ABC

↳ Explain

↳ Sec A
↳ Sec B & C

Answer Berkley Hills

Activity Based Costing

	<u>A</u>	<u>B</u>
material	1200	2640
	800	1620
	(38.8×1)	(38.8×1.5)
OH	→ Admin 38.8 → Nursing 104.64 → Cleaning 9.28 → General 144	(436×2) 209.28 (9.28×1) 9.28 (37.12×1) 37.12 (6×2) 288 (6×4.8) 28.8
ABC	2296.72	4852.6
Cost per procedure	2475	4735
Absorption		

① Admin

$$= \frac{1870160}{48200} = 38.8 \text{ / adm time per year}$$

② Nursing

$$\frac{5215616}{1425600} = 36.6 \text{ / stay}$$

③ Cleaning

$$= \frac{966976}{104200} = 9.28 \text{ / meal}$$

$$= \frac{966976}{104200} = 9.28 \text{ / meal}$$

④ General

$$= \frac{8553600}{1425600} = 6 \text{ / patient stay}$$

→ schedule of live class

→ class going pattern

June 1/July

Mon	9:00 : 6:00	3-5:30
Tues	9:00 : 6:00	"
Sat	3 : 6:00	"
Sun	12:00 - 4:00	"
		1

Answer Duff CoAbsorptive Costing

	X	Y	Z
mat	500,000	448,000	484,000
lab	(25 × 20,000)	(28 × 16,000)	(22 × 22,000)
OH	600,000	576,000	528,000
	(30 × 20,000)	(36 × 16,000)	(24 × 22,000)
Cost units	1,585,000	1,489,600	1,438,800
Cost/unit	79.25	93.1	65.4
OAR - total OH	1377400	= 9.7/lab	
lab hours	142000	hour	

$$\begin{aligned} X & (2.5 \times 20,000) = 50,000 \\ Y & (3 \times 16,000) = 48,000 \\ Z & (2 \times 22,000) = 44,000 \\ & \underline{142000} \end{aligned}$$

Activity based Costing

	X	Y	Z
mat	500,000	448,000	484,000
lab	600,000	576,000	528,000
OH			
Setup	97280	48680	138870
	(2434+40)	(2434+20)	(2434+55)
mat ord	105320	65830	144820
	(658.3 × 160)	(658.3 × 100)	(658.3 × 220)
mach	155700	103800	159850
	(5.19 × 30000)	(5.19 × 20000)	(5.19 × 30800)
genl	134100	89400	137670
	(4.47 × 30000)	(4.47 × 20000)	(4.47 × 30800)
Cost units	1,592,400	1,381,710	1,588,210
Cost/unit	20000	16000	22000

Cost pools① Setup Costs

$$= 28000$$

115

no of batches

$$X = 20000 = 40$$

500

$$Y = 16000 = 20$$

800

$$Z = 22000 = 55$$

400

$$= 2434.78 / \text{no of batches}$$

② Mat handling

$$= 316000$$

480

no of PO's

$$X = 40 \times 4 = 160$$

$$Y = 20 \times 5 = 100$$

$$Z = 55 \times 4 = 220$$

$$= 658.3 / \text{PO}$$

③ Machine running cost

$$420000$$

80,800

Machine hours

$$X = 20000 \times 1.5 = 30000$$

$$Y = 16000 \times 1.25 = 20000$$

$$Z = 22000 \times 1.4 = 30800$$

5.19 / mach hrs

$$= 80800$$

④ General factory

$$361400 = 4.47 / \text{mach hour}$$

80800

C Since Duff Co is using Cost + pricing i.e adding a certain profit ∵ after lost. If Duff Co is switching to ABC then cost of product X will have an minor impact therefore minor impact on Sales Volume. whereas Product Y has observed a significant decline in cost therefore price will decrease and volume will increase. However, Product Z have followed vice versa that means product Z price will increase therefore demand will decline if shifted to ABC.

⑤ Cost/unit

79

83

72

→ topic

↳ 4-5 past papers ✓

Schrodinger

↳ study hub, Q&Q's, Q&Q

Q DUFFCO

ALL FIVE questions are compulsory and MUST be attempted

Duff Co manufactures three products, X, Y and Z. Demand for products X and Y is relatively **elastic** whilst demand for product Z is relatively **inelastic**. Each product uses the same materials and the same type of direct labour but in different quantities. For many years, the company has been using full absorption costing and absorbing overheads on the basis of direct labour hours. Selling prices are then determined using cost plus pricing. This is common within this industry, with most competitors applying a standard mark-up.

Budgeted production and sales volumes for X, Y and Z for the next year are **20,000 units**, **16,000 units** and **22,000 units** respectively.

The budgeted direct costs of the three products are shown below:

Product	X \$ per unit	Y \$ per unit	Z \$ per unit
Direct materials	25	28	22
Direct labour (\$12 per hour)	30	36	24

→ Price

Tricky one

In the next year, Duff Co also expects to incur indirect production costs of \$1,377,400, which are analysed as follows:

Cost pools	\$	Cost drivers
Machine set up costs	280,000	Number of batches
Material ordering costs	316,000	Number of purchase orders
Machine running costs	420,000	Number of machine hours
General facility costs	361,400	Number of machine hours
	1,377,400	

The following additional data relate to each product:

Product	X Batch size (units)	Y 500	Z 400
No of purchase orders per batch	4	5	4
Machine hours per unit	1.5	1.25	1.4

Duff Co wants to boost sales revenue in order to increase profits but its capacity to do this is limited because of its use of cost plus pricing and the application of the standard mark-up. The finance director has suggested using activity based costing (ABC) instead of full absorption costing, since this will alter the cost of the products and may therefore enable a different price to be charged.

- Required:
- Calculate the budgeted full production cost per unit of each product using Duff Co's current (a) method of absorption costing. All workings should be to two decimal places. (3 marks)
 - Calculate the budgeted full production cost per unit of each product using activity based costing. (b) All workings should be to two decimal places. (11 marks)
 - Discuss the impact on the selling prices and the sales volumes of EACH PRODUCT which a (c) change to activity based costing would be expected to bring about. (6 marks)
- (20 marks)

Absorbtional Costing

	X	Y	Z
mat	600,000	480,000	184,000
	(25 × 2000)	(28 × 1600)	(22 × 2200)
lab	600,000	576,000	528,000
	(30 + 2000)	(36 + 1600)	(24 + 2200)
OH	480,000	4656,00	4268,00
	(9.7 × 5000)	(4.7 × 4800)	(9.7 × 4000)
Cost/unit	1585,000	1484,600	1438,000
	79.25	93.1	97.1
	total OH	1377,400	1377,400
	142,000		

lab hours

$$X = \frac{30}{12} = 2.5 \times 2000 = \$6000$$

$$Y = \frac{36}{12} = 3 \times 1600 = \$4800$$

$$Z = \frac{24}{12} = 2 \times 2200 = \$4400$$

lab hours 142,000

Activity based costing

	X	Y	Z
mat	600,000	480,000	184,000
lab	600,000	576,000	528,000
OH			
Setup	47280	48680	133870
meth/hnd	105720	60830	144820
mach/fun	155200	62380	159280
Cust/R&D	134100	84400	137670
Cost pools	1592400	1331710	1588210
① Set of Cost	20000	16000	22000
	79	85	72
	= 28000	x = 20000 ÷ 800 = 10	z = 22000 ÷ 400 = 55
		y = 16000 ÷ 800 = 20	
		2 = 22000 ÷ 400 = 55	
		2	115
			115
		= 2434.78 / no of batches	

② mat and Cost

$$\frac{316000}{480} \rightarrow x = 4 \times 40 = 160$$

$$y = 5 \times 20 = 100$$

$$z = 4 \times 55 = 220$$

= 658.3 / PO

③ machine cost

$$\frac{420000}{80800} \rightarrow x = 1.5 \times 1000 = 1500$$

$$y = 1.25 \times 1000 = 1250$$

$$z = 1.4 \times 1000 = 1400$$

= 5.10/mach hrs

④ facility lost

$$361000 = 4.47 / mach hrs$$

80,800

APM → Dec 10

- 2 Robust Laptops Co (RL) make laptop computers for use in dangerous environments. The company's main customers are organisations like oil companies and the military that require a laptop that can survive rough handling in transport to a site and can be made to their unique requirements.

The company started as a basic laptop manufacturer but its competitors grew much larger and RL had to find a niche market where its small size would not hinder its ability to compete. It is now considered one of the best quality producers in this sector.

RL had the same finance director for many years who preferred to develop its systems organically. However, due to fall in profitability, a new chief executive officer (CEO) has been appointed who wishes to review RL's financial control systems in order to get better information with which to tackle the profit issue.

The CEO wants to begin by thinking about the pricing of the laptops to ensure that selling expensive products at the wrong price is not compromising profit margins. The laptops are individually specified by customers for each order and pricing has been on a production cost plus basis with a **mark-up of 45%**. The company uses an absorption costing system based on labour hours in order to calculate the production cost per unit.

The main control system used within the company is the annual budget. It is set before the start of the financial year and variances are monitored and acted upon by line managers. The CEO has been reading about major companies that have stopped using budgets and wants to know how such a radical move works and why a company might take such a step. He has been worried by moves from RL's market with impressive new products. This has created unrest among the staff at RL with two experienced managers leaving the company.

Financial and other information for Robust Laptops

Robust Laptops	
Data for the year ended 30 September 2010	
Volume (units)	23,800
Direct variable costs	Total \$'000
Material	40,650
Labour	3,879
Packaging and transport	2,118
Subtotal	46,647
Overhead costs	
Customer service	CS
Purchasing and receiving	PR
Inventory management	IM
Administration of production	PP
Subtotal	14,190
Total	60,837
Labour time per unit	3 hours
Data collected for the year:	
No of minutes on calls to customer	899,600
No of purchase orders raised	91,400
No of components used in production	618,800

Order 11784

Units ordered	
Direct costs for this order:	
Material	\$ 27,328
Labour	2,608
Packaging and transport	1,424
Other activities relating to this order:	
No of minutes on calls to customer	1,104
No of purchase orders raised	64
No of components used in production	512
Administration of production (absorbed as general overhead 3 Labour hrs per unit)	

Required:

Write a report to the CEO to include:

- (a) An evaluation of the current method of costing against an Activity Based Costing (ABC) system. You should provide **illustrative calculations** using the information provided on costs for 2010 and Order 11784. Briefly state what action management might take in the light of your results with respect to this order. (15 marks)

- (b) An explanation of the operation of a beyond budgeting approach and an **evaluation of the potential of such a change at RL**. (10 marks)

Professional marks will be awarded in Question 2 for appropriateness of format, style and structure of the report. (4 marks)

discuss

vrob

⇒ P60's and Con's
⇒ linking it with a scenario

(29 marks)

Ans RL

Report

To: CEO

From: Accountant

Date: Dec 2010

Subject: Costing Systems and budgetary Controls at RL

Introduction

Firstly, the costing and pricing methods are reviewed and then compared results of ABC and Absorptive costing. Then the choice of costing systems would be evaluated. Lastly, the idea of eliminating budget and still remain in control will be discussed.

a) Absorptive and
appendix → Price under ABC for each unit of order 11784

Absorptive Costing

Standard Cost

$$\text{Direct} = (46,647,000 \div 23,800) = 1960$$

$$\text{OH allocation} = 198.7 \times 3 = \underline{596}$$

$$\text{Cost} = \underline{2556}$$

$$\text{markup} = 45\% = \underline{1150} \quad \text{B)$$

$$\text{Price} = \underline{2556} \times 100\% = \underline{3706}$$

$$\text{OPR: } \frac{1419000}{23800 \times 3} = 198.7 \text{ /labour hrs}$$

$$23800 \times 3 = 71400$$

Activity based Costing → per unit cost

$$\text{Direct Cost} = 1960$$

OH

$$\underline{CS} = 859 \times 1104 = 9483 \div 16 = 593$$

$$\underline{PR} = 114.5 \times 64 = 7328 \div 16 = 458$$

$$\underline{IM} = 2.37 + 512 = 1213 \div 16 = 76$$

$$\underline{AP} = 35.5 + 3 = \underline{106.6}$$

each unit requires 3 hours \hookrightarrow labour hours 3144 Cost

$$\text{Cost} = 3194$$

$$\text{markup} 45\% = \underline{1437}$$

$$\text{Price} = \frac{3194 + 1437}{100\%} = \underline{4631}$$

Pools

$\frac{\text{Total pool cost}}{\text{Total pool done}}$

(1) Customer Service

$$= \frac{7738000}{8591600} = \underline{8.91 \text{ cells}}$$

(2) Purchase and delivery

$$= \frac{2461000}{21400} = \underline{114.5180}$$

(3) Inventory management

$$\frac{1467000}{618800} = \underline{2.371 \text{ fortnight}}$$

(4) Admin

→ partly it is general overhead

$$\frac{2537000}{71400} = 35.5 \text{ / lab hour}$$

The costing system is important in RL not just as a method of reporting to senior management but it helps RL to determine price that customer pays so a competitive price needs to be present.

Absorptive Costing is a traditional system that provides overhead allocation on labour hours or machine hours. ABC is a modern technique that suggest to have overhead allocation on an activity level that consider that overhead instead of only using machine hours or labour hours.

ABC is appropriate where major OH's belong to other activity levels as directly their OH's from M&L would result in unfair allocation.

using order 11784 as example, normal cost per unit for RL would be 2556 and price 3706 under ABC, cost of 11784 order is 3194 and price of 4631. This represent an increase in cost because OH allocated have been on activities that have driven those cost and hence provide a fair view.

major cost arises due to Customer service and Purchase orders which have been allocated fairly. Now management have to decide whether to sacrifice the profit or try to control cost associated with cells to Customer and Purchase order by scaling.

The impact on Customer and competitive position of RL should be considered while increasing the price.

b) beyond budgeting

↳ we will solve it later

$$\underline{+92332623844}$$

ABB & ABM

A budget prepared while using principles of Activity based costing principles.

Ex Y12 had two three major activities

$$\text{Sales} = 260$$

$$\text{Setup} = 100$$

$$\text{Purchase} = 800$$

Budgeted cost for the coming period are :-

Total \rightarrow Allocated to

$$\text{Salaries} = 60000 \quad \text{Admin 10,000, Supervision 50,000}$$

$$\text{general} = 80000 \quad \text{Delivery 40000, Setup 30000, PO 10000}$$

$$\text{overheads} = 260000 \quad \text{Delivery 15000, PO 5000}$$

$$\text{Basic O/Pay} = 100000 \quad \text{Setup Cost 8000, PO 2000}$$

$$\text{O/P�niture} = 16000 \quad \text{Supervision 3000, Admin 7000, Delivery 5000}$$

$$\text{Total} \quad \text{ABB cost/unit}$$

Cost / activity unit			
Dt or R	Sv cost	PO	
Salaries	-	-	
General	10000	30000	10000
OT hrs	1500	-	5000
OT basic pay	8000		2000
OT premium	5000		
	—	—	—
	60000	38000	17000
divers	250	100	800
lost / unit	240	380	2125

↳ under ABB

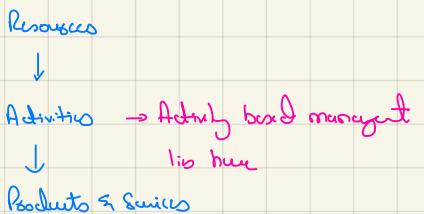
ABB → Activity based budgets

Method of budgeting based on activity framework and utilising cost driver data in budget setting and variances feedback process

Steps for ABB implementation

- Production volume → divers
- Demand for activities → sever costs are incurred
- Resources → allocate resources appropriately

Activity based management



Management of Activities

- Driver analysis
- Activity analysis
- Performance evaluation

Driver analysis solves what exactly drives your cost
Activity analysis solves what activities are been done

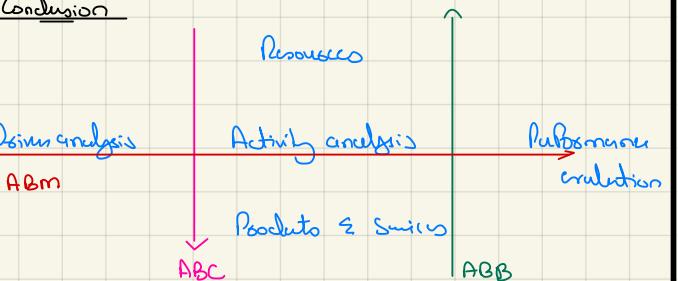
↳ analyse activity necessary
↳ ABM → Controlling → why ??

Performance evaluation

↳ responsible one performance can be evaluated

makes you more focused towards controlling activities and having a good eye on the cost

Conclusion



Beyond Budget Systems

Beyond Budgeting means moving away from old traditional budgets

- time consuming
 - unrealistic
 - assumptions driven
 - financial key metrics
- Budget → USD 200
Actual → USD 300

Difference between traditional & beyond budgeting

	Traditional	Beyond budgeting
Budget type	Fixed annual plan	Billing budgets, focus on non financial perf
Targets & rewards	Previous years incremental targets fixed rewards	target relative targets flexible targets
Resources	Predefined resources	Resources can be demand on demand resources
Culture	Centralised budgeting and focus numbers	Decentralised focus on value creation

7.4 The principles of BB → Beyond budgeting → books BPP

There is no defined list of BB principles that should be adopted by an organisation in order to succeed at this approach. However, the following is a list of common best practices adopted by organisations using a BB approach:

Area of best practice	Explanation
Governance and transparency	<ul style="list-style-type: none"> Employees are bound by a clear organisational mission and set of values, to a common cause, rather than being controlled by a central plan. Governance is through shared values and sound judgement, not detailed rules and regulations. Information is open and transparent; not restricted and controlled. For example, information systems may be activity-based, reporting on activities for which managers and teams are responsible.
Accountable teams	<ul style="list-style-type: none"> The organisation consists of a network of accountable teams who are empowered and trusted to regulate their performance with limited centralised and hierarchical control and no micro management. Team managers and employees are given a high degree of freedom to make decisions that generate value. This is consistent with concepts such as Business Process Re-engineering (Chapter 4) and total quality management (Chapter 12). Teams are responsible for relationships with customers, suppliers and other stakeholders. Budgets may still be used but these will be set at local level (bottom-up) using local knowledge.
Goals, targets and rewards	<ul style="list-style-type: none"> Managers will be given a range of challenging, but controllable, goals and targets linked to shareholder value, e.g. recognising the importance of both financial measures (such as gross profit margin or ROCE) and non-financial measures (such as customer satisfaction, innovation or sustainability). A performance management model such as the balanced scorecard (Chapter 11) may be used. Targets will often be based on external benchmarks. Innovation and continuous improvement is encouraged and rewarded.

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Planning and control	<ul style="list-style-type: none"> Planning is a continuous and inclusive process, not a top-down annual event. Rolling budgets may be used. These are flexible and can be quickly adjusted to changes in the organisation's environment and should result in more timely allocation of resources. The focus is on future events, not the past. Controls that do exist are based on fast, frequent feedback and not budget variances.
e.g. Illustration 4 – Toyota, a world class management model	

For APM

→ to read some chapters from BPP

ExampleIllustration 4 – Toyota, a world class management model

Toyota is an example of an organisation that has moved away from traditional budgetary methods for organisational control.

Toyota is one of the best-managed manufacturing companies in the world. Its Toyota Production System is legendary. Management focuses on continuous improvement and meeting customers' needs. Everyone has a voice and is expected to contribute to the continuous improvement of their work. Medium-term goals aimed at best practice are set at every level. Planning takes place at team level and happens monthly within a clear strategic framework (12 month rolling forecasts support capacity planning). Resources are made available just-in-time to meet each customer order. There are no fixed targets, no annual budget constraints and people are trusted with information to make the right decisions).

7.5 Advantages and disadvantages of BB

adv/adv
↳ linking it with
Scenario

Advantages

- Planning is continuous and the organisation is more likely to be proactive rather than reactive to changes in its environment. Lower costs should result from a move away from the concept of a budget entitlement towards a focus on the purpose for which costs are being incurred.
- Targets become more challenging and have a more external focus. They stretch staff and encourage staff to find better ways to do things. They also make the organisation more customer and supplier focused, improving relationships with key stakeholders.
- The organisation becomes more innovative and continuously improves.

Disadvantages

- Planning, coordination and performance evaluation become more complicated. This has the added impact that reward systems also become more complex.
↳ doing a reward system is not as easy this
- If benchmarks and targets are viewed as being unachievable then effort to achieve them is reduced rather than improved. (Targets should be viewed as challenging 'stretch' targets rather than unachievable, uncontrollable or out of reach).
↳ goals are not communicated
- Although employees should be bound by a clear mission and set of values, sometimes organisational goals are less clear and are not communicated throughout the organisation. This means, for example, that many key stakeholders such as providers of finance and shareholders may lose out as the organisation focuses more on customers and innovation.
- Organisations that move to a BB structure can often face a lot of resistance from staff and managers where traditional budgets may be very deeply ingrained in the organisation's culture. If staff fail to fully embrace the new system and targets then the system is set to fail. For example, this may be the case in public sector organisations (discussed in Chapter 10) where managers are under pressure to adhere to traditional budgets in a resource constrained environment.
- It may be very difficult or impractical for organisations to adopt the culture of decentralisation on which successful BB depends.
- The need for more up-to-date and accurate information requires costly investment. (Information systems will be discussed in Chapter 5).

New system implementation is always a difficult one

RLB

(b) Beyond Budgeting

The monitoring of variances between actual and budgeted variance is often the primary control mechanism available to the management of a company. Therefore, the suggestion of dropping the process which forms a major part of the finance department's efforts in a year is likely to be greeted with surprise.

The process known as going beyond budgeting involves replacing the annual system of a centrally created budget with a more flexible system of targets. Performance measurement changes from monitoring variances from the budget towards measuring achievement of strategic goals, adding value and performance against suitable benchmarks.

The new system will use forecasts produced and revised regularly by the line managers, thus devolving decision-making. The targets will often be more important for cashflow monitoring rather than cost control. The targets are intended to guide rather than constrain the line managers thus improving their motivation.

The approach of going beyond budgeting is considered appropriate in industries where there are rapid changes in the business environment and where intangibles such as know-how are key to competitive advantage. This appears to be the case for RL as it operates in a sector dominated by technological change. The traditional budgetary approach has drawn criticism as it sets fixed targets which are not responsive to change during the budget period. The method also sits uncomfortably with management methods such as total quality approaches since they tend to preach a continuous improvement to processes. Budgets can also struggle in organisations using other radical change approaches to management such as business process reengineering. As RL has been going through a period of poor performance, change is likely to be a feature of its operation in the near future.

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↳ linking with
a scenario

Budgets are also criticised as stifling creativity in organisations. This creativity may help RL in finding solutions to its current financial difficulties. Budgets can be perceived as an imposition of top-down control and so conflict with giving all employees power to make decisions. A culture of innovation and employee empowerment would help to combat the problems faced by RL of losses of competitive position and key staff.

Finally, budgets can encourage gaming behaviour where staff act in the interests of expanding or padding their own budgets without considering the overall impact on the company. The focus on value-added targets of going beyond budgeting can help to avoid such dysfunctional behaviour.

Conclusion

A costing system change may be warranted as ABC appears to provide valuable additional information that will assist RL in addressing its financial problems. A detailed cost benefit analysis will have to be undertaken to identify if the extra work in collecting data on activities is warranted by this improvement in information for decision-making.

Additionally, RL appears to derive its advantage from the quality of its products and so innovation and flexibility in manufacturing and handling customers' needs will be paramount. Therefore, a non-budgetary system of control could be used at RL provided sources for appropriate alternative targets can be found.

Appendix:

→ I always read, quickly examine answer, it would allow you to note down some extra points.

→ 10 marks → 6-7 points
→ don't expect from a student to write like this,

Points that examiner marks

- mechanism change → suggestive
- defining beyond budgeting
- preferred by industry
- empowers employees → decentralised structure
- dysfunction behaviour
- RL performance → change might result that

Questions to attempt

- (1) Alfonso
- (2) Diblic
- (3) Pelcins
- (4) CRC

→ attempted three questions on sum practice past papers
→ what happened me
+92 331 2623849

Case Study Platform

Alfonso is a large producer of industrial chemicals, with divisions in 25 countries. The agrochemicals division produces a chemical pesticide, known internally as 'ALF', to control pests in a crop which is of worldwide significance, economically and for food production. Pesticides such as ALF only remain effective for a limited time, after which pests become resistant to them and a replacement product needs to be found. A scientific study has shown that the current variant, ALF6, is becoming ineffective in controlling pests and in some places, it has accumulated in the soil to levels which may significantly reduce crop yields in the future if it is continued to be used. The agrochemicals division is evaluating three new products to find one replacement for ALF6.

ALF7
ALF7 is produced by a small chemical modification to the existing product and requires little research and development (R&D) resources to develop it. As it is closely related to the current variant, it is only expected to remain effective, and in use, for three years. It is unclear whether ALF7 will accumulate in the soil in the same way as ALF6 does.

Red

Red is a new type of pesticide which will incur large amounts of R&D expenditure to develop a commercial version. In addition, the agrochemicals division will have to fund a long-term scientific study into the effect of Red on the environment at a cost of \$4m for each of the 15 years that the product will be in use, and for five years afterwards.

Production of Red generates large amounts of toxic by-products which must be treated in the division's waste treatment facility. The production plant used to produce Red must also be decommissioned for cleaning, at an estimated cost of \$45m, at the end of the life of the product.

Green

Green is a form of a naturally occurring chemical, thought to be safe and not to accumulate in the environment. It is expected to remain in use for eight years. Production of Green requires relatively large amounts of energy. Significant R&D expenditure is also needed to produce an effective version, as Green remains active in the environment for only a short time. Because of this, Green is unsuitable for use in climates where crop production is already difficult.

The Global Food Production Organisation (GFPO) is a non-governmental organisation which funds new ways to increase global crop production, especially in regions where food for human consumption is already scarce. The GFPO has agreed to make a significant contribution to the R&D costs of producing a replacement for ALF6, but will be unwilling to contribute to the R&D costs for Green because it cannot be used in every region. Similarly, a number of governments, in countries where Alfonso has licences to operate its other chemical businesses, have warned the company of the potential public disapproval should the agrochemical division choose to replace ALF6 with a product unsuitable for use in areas where food production is scarce.

The newly appointed chief financial officer (CFO) for the agrochemicals division has asked you as a performance management consultant for your advice. 'One of our analysts in the agrochemicals division', she said, 'has produced a single period statement of profit or loss (Appendix 1) to show the profitability of the three new products we are considering as replacements for ALF6.'

'I think the analyst's calculations are too simplistic', she continued. 'The costs of the waste treatment are apportioned based on the expected revenue of the new products. This is consistent with Alfonso's traditional group accounting policy, but I don't think this gives an accurate costing for the new products. Also, I watched a presentation recently about the use of lifecycle costing and also how environmental management accounting (EMA) can help reduce costs in the categories of conventional, contingent and reputation costs and as a result improve performance.'

Appendix 1

Single period statement of profit or loss for the replacement products for ALF6¹

	ALF7	Red	Green
Revenue per litre (\$)	8.00	13.00	11.00
Quantity sold and produced (million litres)	100	85	75
	\$m	\$m	\$m
Revenue	800	1,105	825
Direct material, labour and energy	(524)	(724)	(565)
Factory overheads	(80)	(122)	(74)
Environmental study	—	(4)	—
Waste treatment of toxic by-products ²	(54)	(63)	(71)
Net profit ³	142	192	115
Average profit per litre (\$)	1.42	2.26	1.53

Notes to the statement of profit or loss:

¹ – All figures exclude the contribution from the GFPO towards the R&D costs of the new product.

² – Waste treatment is an overhead cost incurred in the division's waste treatment facility. Currently, costs of waste treatment are apportioned to products according to expected revenue. The total annual cost of the waste treatment facility, which processes a total of 85m litres of waste each year, is \$300m. Any waste treatment capacity not used by any of the three new products can be used to treat waste created during the manufacture of other products in the division. One litre of waste by-product is produced for every 2.5 litres of ALF7 produced, for every 2.5 litres of Red produced and for every 100 litres of Green.

³ – R&D costs are incurred in the division's R&D facility. In accordance with the group's accounting policy, R&D expenditure is not currently apportioned to individual products. The annual cost of the R&D facility is \$60m and has a total of 30,400 R&D hours available, of which 800 hours would be required to develop ALF7, 8,500 hours to develop Red, and 4,000 hours to develop Green.

Required:

- (a) (i) Explain how activity based costing may help the agrochemicals division in assessing the profitability of the three new products. → *theoretical discussion of ABC* (5 marks)
 - (ii) Using activity based costing, and excluding the value of the grant from the GFPO, calculate the total R&D costs and waste treatment costs of the three new products. → *Application of ABC* (3 marks)
 - (b) Using your answers from part (a) (ii), calculate the average net profit per litre of each of the three alternative new products over their expected lifecycles and comment on the results. → *LULC* (9 marks)
 - (c) Advise how environmental management accounting (EMA) may help improve the performance of the agrochemicals division. (8 marks)
- (25 marks)

Dibble is formed of two autonomous divisions, Timber and Steel, and manufactures components for use in the construction industry. Dibble has always absorbed production overheads to the cost of each product on the basis of machine hours.

Timber Division

Timber Division manufactures timber frames used to support the roofs of new houses. The timber, which is purchased pre-cut to the correct length, is assembled into the finished frame by a factory worker who fastens the components together. Timber Division manufactures six standard sizes of frame which is sufficient for use in most newly built houses.

Steel Division

Steel Division manufactures steel frames and roof supports for use in small commercial buildings such as shops and restaurants. There is a large range of products, and many customers also specify bespoke designs for short production runs or one-off building projects. Steel is cut and drilled using the division's own programmable computer aided manufacturing machinery (CAM), and is bolted together or welded by hand.

Steel Division's strategy is to produce novel bespoke products at a price comparable to the simpler and more conventional products offered by its competitors. For example, many of Steel Division's customers choose to have steel covered in one of a wide variety of coloured paints and other protective coatings at the end of the production process. This is performed off-site by a subcontractor, after which the product is returned to Steel Division for despatch to the customer. Customers are charged the subcontractor's cost plus a 10% mark up for choosing this option. The board of Steel Division has admitted that this pricing structure may be too simplistic, and that it is unsure of the overall profitability of sales of some groups of products or sectors of the market.

Recently, several customers have complained that incorrectly applied paint has flaked off the steel after only a few months' use. More seriously, a fast food restaurant has commenced litigation with Dibble after it had to close for a week while steel roof frames supplied by Steel Division were repaired. Following this, the production manager has proposed increasing the number of staff inspecting the quality of coating on the frames, and purchasing expensive imaging machinery to make inspection more efficient.

The chief executive officer (CEO) at Dibble has approached you as a performance management expert for your advice. 'At a conference recently', he told you, 'I watched a presentation by a CEO at a similar business to ours talking about the advantages and disadvantages of using activity based costing (ABC) and how over several years the adoption of activity based management (ABM) had helped them to improve both strategic and operational performance.'

'I don't want you to do any detailed calculations at this stage, but I'd like to know more about ABC and ABM, and know whether they would be useful for Dibble', he said.

You are provided with extracts of the most recent management accounts for Timber and Steel Divisions:

Division (\$000)	Timber	Steel
Revenue	25,815	20,605
Materials	12,000	10,100
Direct labour	4,500	850
Subcontract costs	75	650
Analysis of production overheads (\$000)		
Set up time for CAM machinery	—	575
Machining time	—	2,777
Storage of goods awaiting or returned from subcontractors	120	395
Transfer of goods to and from subcontractors	50	300
Inspection and testing	35	425
Total production overheads	205	4,472
Gross profit	9,035	4,533

Required:

- (a) (i) Advise the CEO how activity based costing could be implemented. (4 marks)
 - (ii) Assess whether it may be more appropriate to use activity based costing in Timber and Steel Divisions than the costing basis currently used. (8 marks)
 - (b) Advise the CEO how activity based management could be used to improve business performance in Dibble. (13 marks)
- (25 marks)

Perkin manufactures electronic components for export worldwide, from factories in Ceeeland, for use in smartphones and hand held gaming devices. These two markets are supplied with similar components by two divisions, Phones Division (P) and Gaming Division (G). Each division has its own selling, purchasing, IT and research and development functions, but separate IT systems. Some manufacturing facilities, however, are shared between the two divisions.

Perkin's corporate objective is to maximise shareholder wealth through innovation and continuous technological improvement in its products. The manufacturers of smartphones and gaming devices, who use Perkin's components, update their products frequently and constantly compete with each other to launch models which are technically superior.

Perkin has a well-established incremental budgeting process. Divisional managers forecast sales volumes and costs months in advance of the budget year. These divisional budgets are then scrutinised by the main board, and revised significantly by them in line with targets they have set for the business. The finalised budgets are often approved after the start of the accounting year. Under pressure to deliver consistent returns to institutional shareholders, the board does not tolerate failure by either division to achieve the planned net profit for the year once the budget is approved.

Last year's results were poor compared to the annual budget. Divisional managers, who are appraised on the financial performance of their own division, have complained about the length of time that the budgeting process takes and that the performance of their divisions could have been better but was constrained by the budgets which were set for them.

In P Division, managers had failed to anticipate the high popularity of a new smartphone model incorporating a large screen designed for

high costs of doing so, which had not been budgeted for. Based on the original sales forecast, P Division had already committed to manufacturing large quantities of the existing version of the component and so had to heavily discount these in order to achieve the planned sales volumes.

A critical material in the manufacture of Perkin's products is silver, which is a commodity which changes materially in price according to worldwide supply and demand. During the year supplies of silver were reduced significantly for a short period of time and G Division paid high prices to ensure continued supply. Managers of G Division were unaware that P Division held large inventories of silver which they had purchased when the price was much lower.

Initially, G Division accurately forecasted demand for its components based on the previous years' sales volumes plus the historic annual growth rate of 5%. However, overall sales volumes were much lower than budgeted. This was due to a fire at the factory of their main customer, which was then closed for part of the year. Reacting to this news, managers at G Division took action to reduce costs, including closing one of the three R&D facilities in the division.

However, when the customer's factory reopened, G Division was unwilling to recruit extra staff to cope with increased demand; nor would P Division re-allocate shared manufacturing facilities to them, in case demand increased for its own products later in the year. As a result, Perkin lost the prestigious preferred supplier status from their main customer who was unhappy with G Division's failure to effectively respond to the additional demand. The customer had been forced to purchase a more expensive, though technically superior, component from an alternative manufacturer.

The institutional shareholders' representative, recently appointed to the board, has asked you as a performance management expert for your advice. 'We need to know whether Perkin's budgeting process is appropriate for the business, and how this contributed to last year's poor performance', she said, 'and more importantly, how do we need

to change the process to prevent this happening in the future, such as a move to beyond budgeting.'

Required:
 (a) Identify the weaknesses in Perkin's Current Budgeting System and whether it is suitable for the environment in which Perkin Operates. (13 marks)
 (b) Evaluate the impact on Perkin of moving to beyond budgeting. (12 marks)

Cortinas Retail Clothing (CRC): Company information

CRC started as a clothing retailer 20 years ago with one store. The business expanded steadily and had 10 stores after 18 years of trading. Since then, the rate of expansion has increased rapidly with an average of four stores opening per year.

CRC is planning to open its first large out of town store soon and is also considering the acquisition of a food retailing business. Both of these will be supplied with items using CRC's existing central warehouse.

Introduction of RFID system

At the beginning of the 20X5 accounting year, to cope with this rapid growth, CRC acquired a RFID (radio frequency identification device) system at its single central warehouse. This was to help manage inventory more effectively and speed up the processes for receiving items from suppliers and despatching them to stores. Items are still moved manually by staff in the CRC warehouse where there is little automation compared to competitors. There has been some resistance from staff to the RFID system, which they find difficult to use. CRC is currently trying to reduce the number of suppliers it has to help increase efficiency in the warehouse.

Budgeting system

The budget setting process has remained unchanged since CRC was formed. All managers prepare draft budgets using spreadsheets and submit them to the CRC board for approval. Managers use the previous year results as a starting point when drafting the budgets and increase the variable costs in line with any anticipated growth in volumes. For example, when preparing the budget for the year ending 30 June 20X6, the manager of the central warehouse used the actual costs of running the warehouse from the previous year and increased them all by the same percentage. This was to reflect an anticipated increase in volumes in 20X6 over 20X5. Managers are appraised on their performance against the approved budgets.

CRC has needed all its financial resources to fund its expansion and so it has only old and basic IT systems which are not enterprise resource planning systems, unified databases or networked systems.

It has been suggested to the CRC board that the current system of budgeting is no longer suitable and that the business should move to activity-based budgeting (ABB). The CEO has asked you to evaluate the potential introduction of ABB at CRC.

Central warehouse activity in July 20X5

The board has never seen an activity-based budget before and is unsure how it could be used to explain variances between actual and budgeted performance in the central warehouse. As an example, they would like to see how an activity-based budget for the year ending 30 June 20X6 could be used to explain variances from the actual results for the month of July 20X5.

The two key activities which drive costs in the central warehouse are receipts of items into the goods inwards section and despatches of items from the goods outwards section. A receipt into good inwards involves accepting a delivery of items from a supplier, tagging those items and putting them away in the warehouse. Receipts from suppliers contain variable numbers of individual items. Despatches of items from goods outwards are to CRC's own retail stores. Cost driver rates for these two activities will be used to set monthly cost budgets for the warehouse.

The board asked an analyst to prepare an activity-based budget for the central warehouse for the year ending 30 June 20X6. The analyst has collected relevant information on the costs for the year needed to prepare the activity-based budget and has begun the work (Appendix 1).

The total annual cost relating to goods inwards needs to be determined. This should be used to calculate the budgeted cost of each receipt into goods inwards, in order to explain the variance between the budgeted cost and the actual cost of receipts of goods inwards for the month of July 20X5. The analyst has already correctly included the costs of the warehouse manager's salary and the lease of the RFID system into the incomplete activity-based budget in Appendix 1.

The board has asked you to complete the analyst's work.

To enable you to complete your calculations, you are told that in July 20X5 there were 650 receipts into goods inwards. These receipts contained 100,000 items, which is the same as the budgeted number of items for the month. The actual total cost of activities driven by receipts into goods inwards for the month was \$18,000.

It is now 1 September 20X5.

Appendix 1

Analyst's incomplete activity-based budget for the central warehouse for YE 30 June 20X6

	Total	Goods inwards	Goods outwards	Other
Warehouse manager's salary ¹	\$ 55,000	–	–	\$ 55,000
Lease of RFID system ²	\$ 75,000	45,000	30,000	–

RFID tagging³
Warehouse staff wages⁴
Heating and lighting⁵

Sub-total cost of activities driven by the receipt of goods inwards

3. The cost of RFID tagging is the wages cost for specially trained staff, known as taggers. Their only job is to attach RFID tags to items when they are received, before the items are put away in the warehouse. All items received are RFID tagged and the costs of tagging are allocated entirely to the cost of goods inwards. Each tagger can attach 35,000 tags per month and is paid an annual salary of \$24,000. The cost of each individual RFID tag is negligible.

4. There were 12 full-time warehouse staff throughout the year to 30 June 20X5 who were each paid an annual salary of \$22,500. Two more staff will be recruited at the beginning of the new budget year. 50% of the warehouse staff work in goods inwards and 50% in goods outwards.

5. The cost of heating and lighting relates to all sections of the warehouse and cannot be apportioned directly to goods inwards or goods outwards. The actual heating and lighting cost for last year was \$10,000 and the warehouse manager has proposed a budget of \$10,500 for the coming year. The general cost of inflation though is expected to be zero.

6. The annual number of receipts into goods inwards expected is 9,000, containing a total of 1,200,000 items. These are expected to occur evenly over the year.

Required:

(a) Evaluate whether CRC should move from its current budgeting system to ABB. (13 marks)

(b) Complete the analyst's work in Appendix 1 as required by the board and explain the variance between the budgeted cost and the actual cost for each receipt into goods inwards for July 20X5. (12 marks)

Planning and operational Variance

sw = revised

↳ Loop variance

↳ important formula's

qty = quantity

std = standard

original

+ve → adverse
-ve → favourable

Planning & operational Variance of Material

F2 : MA

Material

↳ F2 → update

↳ FS → PE/APM

MPV = Actual Qty Consumed × (Actual price per kg - Std price per kg)

MVR = Std price per kg × (Actual qty consumed - Std qty allowed)

↳ Std qty allowed = std qty per unit × Actual units produced

FS → PM → FS / APM

Planning variance

MPV = sw std qty allowed × (Rev std price/kg - std price/kg)

MVR = std price/kg × (sw std qty allowed - std qty allowed)

Operational Variance

MPV = Actual qty consumed × (Actual price/kg - sw std price/kg)

MVR = sw std price/kg × (Actual qty consumed - sw std qty allowed)

Planning and operational Variance of labour

F2 → MA

LRV = Actual hours worked × (Actual lab rate/hrs - std lab rate/hrs)

LFR = std lab rate/hrs × (Actual hours worked - std hours allowed)

↳ std hours allowed = std hours per unit × Actual units produced

FS → PM APM

Planning variance

LRV = sw std hours allowed × (sw std lab rate/hrs - std lab rate/hrs)

LFR = std lab rate/hours × (sw std hours - std hours allowed)

Operational Variance

LRV = Actual hours worked × (Actual lab rate/hrs - sw std lab rate/hrs)

LFR = sw std lab rate/hrs × (Actual hours worked - sw std hours allowed)

original

+ve → adverse
-ve → favourable

Planning & operational Variance of sales

SVCR = Sales Volume Cont variance

F2 MA

SPV = Actual units sold × (Std SP Unit - Actual SP Unit)

SVCR = Std cont lunit × (Std Sales unit - Actual Sales unit)

FS → PM

Planning Variance

bud vs sw budget

SPV = sw std Sales units × (Std SP Unit - Rev std SP Unit)

SVCR = std cont lunit × (sw std Sales unit - sw std Sales unit)

↳ manager performance Operational Variance vs actual performance
correct budget

SPV = Actual units sold × (Rev std SP Unit - Actual SP Unit)

SVCR = Rev std cont lunit × (sw std Sales unit - Actual units sold)

→ 18 formula's → learn ✅

→ 6 formula → learn ✓

F2

→ MPV

LRV

SPV

MVR

LFR

SVCR

→ has this is tested

↳ practice question → Solutions

→ PM level question

→ APM

↳ Ques

↳ theoretical

↳ practical application of variances

Planning Variance

Actual → revised standard

Operational Variance

Std → revised standard

↳ operational funnel

+ve = Adverse
-ve = favourable

→ Planning variance?

↳ planning cross → budget cross

↳ standard we set

planning errors

→ Operational variance

↳ sales performance of manager

Q43: A company estimated that each unit will take 4kg and will cost \$6/kg. Actual production was 2000 units which consume 10,000kgs at a material cost of 5000\$. It was then realized that standard should have been 4.5kgs at 5.5/kg.

REQUIRED:
MPV, MUV, write planning and operational

Q44: A company estimated that each unit will take 4kg of material & material cost will be \$5/kg. Actual production was 1,000 units which consumed 6000kg & cost was \$18,000. It was then realized that standard should have been 5kg @ \$4.5/kg.

REQUIRED:
Planning & operational variances.

Q45: A company estimated that standard for a product is 8hrs at \$2/hr. Actual production was 1000 units which used 12,000 hrs & labour cost was \$60,000. It was then realized that standard should have been 7 hrs at \$4/hr.

REQUIRED:
Planning & operational variances.

Q46: A company budget to sell 5,000 units for \$10/unit and estimated its variable cost to be \$6/unit. Actually 8,000 units were sold which earned a revenue of \$56,000. It was then decided to change budgeted sales unit as 7,000 units at S.P. of \$6.5/unit & revise V.Cost to \$4.5/unit.

REQUIRED:
Planning & operational variances.

Q47: A company estimates that each unit will take 5kg @ 4/kg. Actual production was 2000 units consuming 12000kgs at a total material cost of \$54000. Inflation pushed up material price by 10% and changed methods Required each unit 20% more material.

REQUIRED:
Basic variance, Planning & operational variances..

Q48: A company estimated that standard as 8hrs @ 6/hr. Actual production was 5000 units consuming 48000hrs at a labour cost of 300,000. New construction from customer made our process 20% slow.

planning & operational

if A 6 estimated that each unit of prod x will take 5 hours and lab will be paid 8 hours - Actual production is 1000 units which consumed 6000 hours at a total cost of 60000 [It was then realised that std should have been 6.5 hours to make each unit & lab rate should have been 9.75 /hr

- if
 ① LRV, LFV ✓
 ② Planning & operational

<u>std</u>	<u>Actual</u>	<u>swstd</u>
time per unit = 5 hours	production = 1000 units	time per unit = 6.5 hours
lab rate = 8\$/hour	total hours = 6000 hours	lab rate = 9.75
calculation	totaL cost = \$60000	lab rate = 60000/6000

$$LRV = \text{Actual hours worked} \times (\text{Actual lab rate}/\text{hr} - \text{std lab rate}/\text{hr})$$

$$= 6000 \times (10 - 8)$$

$$= + 12000 \text{ Adverse}$$

$$LFV = \text{std lab rate}/\text{hr} \times (\text{Actual hours worked} - \text{std hours allowed})$$

$$\therefore \text{std hours allowed} = \text{std hours spent} \times \frac{\text{Actual unit prod}}{8}$$

$$= 8 \times (6000 - 5000)$$

$$\begin{array}{l} \text{std hours} \\ \text{allowed} \\ \downarrow \\ 5 \times 1000 \end{array}$$

$$= + 8000 \text{ Adverse}$$

Planning → Actual → swstd

$$LRV = (\text{swstd hours allowed}) \times (\text{swstd lab rate}/\text{hr} - \text{std lab rate}/\text{hr})$$

$$= 6500 \times (9.75 - 8)$$

$$= 11375 \text{ Adverse}$$

$$\text{swstd hours allowed} = \text{swstd hours spent} \times \frac{\text{Actual units}}{6.5 \times 1000}$$

$$\text{swstd hours allowed} = 6500$$

$$LFV = \text{std lab rate}/\text{hr} \times (\text{swstd hours allowed} - \text{std hours allowed})$$

$$= 8 \times (6500 - 5000)$$

$$= 12000 \text{ Adverse}$$

Operational → std → swstd

$$LRV = \text{Actual hours worked} \times (\text{Actual lab rate}/\text{hr} - \text{swstd lab rate}/\text{hr})$$

$$= 6000 \times (10 - 9.75)$$

$$= 1500 \text{ Adverse}$$

$$LFV = (\text{swstd lab rate}/\text{hr} \times \text{Actual hours worked} - \text{swstd hours allowed})$$

$$= 9.75 \times (6000 - 5000)$$

$$= 4875 \text{ favourable } (1500) + 4875 = tu$$

Q43. A Company estimated that each unit will take 6kg and will cost \$6/kg. Actual production was 2000 units which consume 10000kg at a mat cost of \$5000 \$. It was then realized that std should have been 4.5kg at \$5.5/kg

if
 → MVR may
 → Planning & operational

std
 seg mat = 4kg
 rate = 6/kg

Actual
 production = 2000
 mat consumed = 10000kg
 mat cost = \$5000
 rate/kg = $\frac{5000}{10000}$
 = \$5/kg

swstd
 seg mat = 4.5 kg
 rate = 5.5/kg

$$MVR = \text{Actual q/kg consumed} - (\text{Actual price/kg} - \text{std price/kg})$$

$$= 10000 \times (5 - 6)$$

$$= 10000 \text{ Adverse}$$

$$MVR = \text{std price/kg} + (\text{Actual q/kg consumed} - \text{std q/kg allowed})$$

$$= 6 \times (10000 - 8000) = 12000 \text{ Adr}$$

$$\text{MPV} = \text{std quantity allowed} \times (\text{Actual price per unit} - \text{Standard price per unit})$$

$$= 4 \times 2000 = 8000$$

Planning → Actual → variances

$$\text{MPV} = \text{actual quantity allowed} \times (\text{standard price per kg} - \text{standard price per kg})$$

$$= 9000 \times (5.5 - 6) = 4500 \text{ FAV}$$

$$\therefore \text{variance allowed} = \text{actual quantity} \times \text{Actual price}$$

$$= 4.5 \times 2000$$

$$= 9000$$

$$\text{MPV} = \text{standard price per kg} \times (\text{actual quantity allowed} - \text{standard quantity allowed})$$

$$= 6 \times (9000 - 8000) = 6000 \text{ Adverse}$$

Operational → std → variances

$$\text{MPV} = \text{Actual quantity consumed} \times (\text{Actual price per kg} - \text{standard price per kg})$$

$$= 10000 \times (5 - 5.5)$$

$$= 5000 \text{ Favourable}$$

$$\text{MPV} = \text{standard price per kg} \times (\text{Actual quantity allowed} - \text{standard quantity allowed})$$

$$= 5.5 \times (10000 - 9000)$$

$$= 5500 \text{ Adverse}$$

Q44: A company estimated that each unit will take 4kg of material & material cost will be \$5/kg. Actual production was 1,000 units which consumed 6000kg & cost was \$18,000. It was then realized that standard should have been 5kg @ \$4.5/kg.

REQUIRED:
Planning & operational variances.

→ MPV MPV → Confirmed

$$6000 \times (3 - 5)$$

$$\text{MPV} = 12000 \text{ FAV}$$

$$\text{MPV} = 10000 \text{ Adr}$$

Planning

$$\text{MPV} = 2500 \text{ FAV}$$

$$\text{MPV} = 5000 \text{ Adr}$$

Operational

$$\text{MPV} = 9000 \text{ FAV}$$

$$\text{MPV} = 4500 \text{ Adr}$$

Q45: A company estimated that standard for a product is 8hrs at \$2/hr. Actual production was 1000 units which used 12,000 hrs & labour cost was \$60,000. It was then realized that standard should have been 7 hrs at \$4/hr.

REQUIRED:

Planning & operational variances.

$$\text{LRV} = 36000 \text{ Adr}$$

$$\text{LFV} = 3000 \text{ Adr}$$

Planning

$$\text{LRV} = 14000 \text{ Adr}$$

$$\text{LFV} = 2000 \text{ FAV}$$

Operational

$$\text{LRV} = 12000 \text{ Adr}$$

$$\text{LFV} = 20000 \text{ Adr}$$

Operational

$\text{SPV} = \text{Actual unit sold} \times (\text{standard SP/unit} - \text{Actual SP/unit})$

$$= 8000 \times (6.5 - 7)$$

$$= 4000 \text{ FAV}$$

$$\text{SRCV} = \text{standard cont/unit} \times (\text{actual units sold} - \text{actual cont/unit})$$

$$= 2 \times (7000 - 8000)$$

$$= 2000 \text{ FAV}$$

Q47: A company estimates that each unit will take 5kg @ 4/kg. Actual production was 2000 units consuming 12000kgs at total material cost of \$54000. Inflation pushed up material price by 10% and changed methods Required each unit 20% more material.

REQUIRED:
Basic variance, Planning & operational variances..

→ 4.5

$$\text{MPV} = 6000 \text{ Adr}$$

$$\text{MPV} = 8000 \text{ Adr}$$

std 5kg	Actual 2000 units 4kg	Rounded 5kg
5kg	4kg	4.5kg
5kg	5kg	5.5kg

REQUIRED:

Planning & operational variances.

SPV SRCV

std

Actual

Varied

budgeted sell = 5000

sell = 8000

Sales = 7000

sales = 10,000

Sales = 8000

S.P. = 6.5

VC = 6/unit

VC = 7.0/unit

VC = 4.5

8000

8000

SPV = Actual units sold × (Standard SP/unit - Actual SP/unit)

$$= 8000 \times (10 - 7) = 24000 \text{ Adr}$$

$$\rightarrow \text{SP.V.C} = 10 - 6.5$$

SPCV = Standard cont/unit × (Standard cont/unit sold - Actual cont/unit sold)

$$= 4 \times (5000 - 8000)$$

$$= 12000 \text{ FAV}$$

Planning

SPV = Standard quantity allowed × (Standard price per unit - Actual price per unit)

$$= 7000 \times (10 - 6.5)$$

$$= 24500 \text{ Adverse}$$

SPCV = Standard cont/unit × (Standard cont/unit sold - Actual cont/unit sold)

$$= 4 \times (5000 - 7000)$$

$$= 8000 \text{ FAV}$$

real planning & operational

$$\text{LRV} = 12000 \text{ Adr}$$

$$\text{LFV} = 48000 \text{ Adr}$$

std 8 hours	Actual 6 hours	Varied 6.25 hours
8 hours	6000	6.25
8 hours	48000	6

Planning

$$\text{LRV} = 0$$

$$\text{LFV} = 48000 \text{ Adr}$$

Operational

$$\text{LRV} = 12000 \text{ Adr}$$

$$\text{LFV} = 0$$

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Fundamentals Level – Skills Module, Paper F5 Performance Management

March/June 2017 Sample Answers

Section C

SU Co

(a) SP (standard price per metre: \$2.85 + 0.95) \$3.00
SQ (standard quantity per dress: 2.2 metres) 1.1 2 metres

From scenario the revised price per metre (RP) is \$2.85, the actual price per metre (AP) is \$2.85 and the revised quantity per dress (RQ) is 2.2 metres.

SQAP (standard quantity for actual production: 2 metres × 24,000) 48,000 metres
RQAP (revised quantity for actual production: 2.2 metres × 24,000) 52,800 metres

From the scenario the actual production level (AP) is 24,000 dresses and actual quantity of material bought and used (AQ) is 54,560 metres.

Material price variances

Planning variance
(SP - RP) × AQ: (\$3.00 - \$2.85) × 54,560 8,184 F

Operational variance
(RP - AP) × AQ: (\$2.85 - \$2.85) × 54,560 0

Total price variance 8,184 F

Material usage variances

Planning variance
(SQAP - RQ) × SP: (48,000 - 52,800) × \$3.00 14,400 A

Operational variance
(RQAP - AQ) × SP: (52,800 - 54,560) × \$3.00 5,280 A

Total usage variance 19,680 A

Total material variance 11,496 A

Tutorial note: These variances could have been calculated using the alternative approach as below.

Material price variances

Planning variance
(AP × RQ) × (SP - RP): 24,000 × 2.2 metres × (\$3.00 - \$2.85) 7,920 F

Operational variance
(RP - AP) × AQ: 54,560 metres × (\$2.85 - \$2.85) 0

Material usage variances

Planning variance
(SQ - RQ) × AP × SP: 24,000 × (2 metres - 2.2 metres) × \$3.00 14,400 A

Operational variance
(AP × RQ) - (AQ × RP): 24,000 × 2.2 metres - 54,560 × \$2.85 5,016 A

Total material variance 11,496 A

(b) AH (actual hours worked and paid): 24 × 160 hours 3,840 hours

SHAP (standard hours for actual production): (24,000 × 8)/60 3,200 hours

RHAP (revised hours for actual production): (24,000 × 10)/60 4,000 hours

From the scenario the standard rate per hour (SR) is \$12, the standard time per dress is eight minutes and the revised time per dress is 10 minutes.

Labour efficiency variances

Planning variance
(SHAP - RHAP) × SR: (3,200 - 4,000) × \$12 9,600 A

Operational variance
(RHAP - AH) × SR: (4,000 - 3,840) × \$12 1,920 F

Total labour efficiency variance 7,680 A

- 4 Block Co operates an **absorption costing system** and sells three types of product – Commodity 1, Commodity 2 and Commodity 3. Like other competitors operating in the same market, **Block Co is struggling to maintain revenues and profits in face of the economic recession which has engulfed the country over the last two years**. Sales prices fluctuate in the market in which Block Co operates. Consequently, at the beginning of each quarter, a market specialist, who works on a consultancy basis for Block Co, sets a budgeted sales price for each product for the quarter, based on his expectation of the market. This then becomes the 'standard selling price' for the quarter. The sales department itself is run by the company's sales manager, who negotiates the actual sales prices with customers. The following **budgeted figures are available for the quarter ended 31 May 2013**.

Product	Budgeted production and sales units	Standard selling price per unit	Standard variable production costs per unit
Commodity 1	30,000	\$30	\$18
Commodity 2	28,000	\$35	\$28.40
Commodity 3	26,000	\$41.60	\$26.40

Block Co uses absorption costing. Fixed production overheads are absorbed on the basis of direct machine hours and the budgeted cost of these for the quarter ended 31 May 2013 was **\$174,400**. Commodity 1, 2 and 3 use **0.2 hours, 0.6 hours and 0.8 hours of machine time respectively**.

The following data shows the actual sales prices and volumes achieved for each product by Block Co for the quarter ended 31 May 2013 and the average market prices per unit.

Product	Actual production and sales units	Actual selling price per unit	Average market price per unit	Mix	Combined
Commodity 1	29,800	\$31	\$32.20	1.2	2.2
Commodity 2	30,400	\$34	\$33.15	0.8	1.7
Commodity 3	25,600	\$40.40	\$39.10	1.5	1.5

The following variances have already been correctly calculated for Commodities 1 and 2:

$$\begin{aligned} \text{Sales price operational variances:} \\ \text{Commodity 1: } \$35,760 \text{ Adverse} & \quad \boxed{33280} \\ \text{Commodity 2: } \$25,840 \text{ Favourable} & \quad + 25,840 \\ \text{Sales price planning variances:} \\ \text{Commodity 1: } \$65,560 \text{ Favourable} & \quad + 33280 \\ \text{Commodity 2: } \$56,240 \text{ Adverse} & \quad \boxed{23360} \end{aligned}$$

Required:

- Calculate, for Commodity 3 only, the sales price operational variance and the sales price planning variance. (4 marks)
- Using the data provided for Commodities 1, 2 and 3, calculate the total sales mix variance and the total sales quantity variance. (11 marks)
- Briefly discuss the performance of the business and, in particular, that of the sales manager for the quarter ended 31 May 2013. (5 marks)

(20 marks)

→ variances
↓
planning
↓
operational
↓
multiple
hostile
hair

ALL FIVE questions are compulsory and MUST be attempted

- 1 Secure Net (SN) manufacture security cards that restrict access to government owned buildings around the world. The standard cost for the plastic that goes into making a card is \$4 per kg and each card uses 40g of plastic after an allowance for waste. In November **100,000 cards were produced** and sold by SN and this was well above the **budgeted sales of 60,000 cards**.

The actual cost of the plastic was **\$5.25 per kg** and the production manager (who is responsible for all buying and production issues) was asked to explain the increase. He said 'World oil price increases pushed up plastic prices by **20% compared to our budget and I also decided to use a different supplier who promised better quality and increased reliability for a slightly higher price**. I know we have overspent but not all the increase in plastic prices is my fault'

The actual usage of plastic **per card** was **35g per card** and again the production manager had an explanation. He said 'The world-wide standard size for security cards **increased by 5% due to a change in the card reader technology**, however, our new supplier provided much better quality of plastic and this helped to cut down on the waste.'

SN operates a just in time (JIT) system and hence carries very little inventory.

Required:

- Calculate the total material price and total material usage variances ignoring any possible planning error in the figures. (4 marks)
- Analyse the above total variances into component parts for planning and operational variances in as much detail as the information allows. (8 marks)
- Assess the performance of the production manager. (8 marks)

(20 marks)

- 5 Truffle Co makes high quality, hand-made chocolate truffles which it sells to a local retailer. All chocolates are made in batches of 16, to fit the standard boxes supplied by the retailer. The standard cost of labour for each **batches is \$6.00** and the standard labour time for each batch is **half an hour**. In November, Truffle Co had budgeted production of **24,000 batches**; actual production was only **20,500 batches**. 12,000 labour hours were used to complete the work and there was no idle time. All workers were paid for their actual hours worked. The actual total labour cost for November was **\$136,800**. The production manager at Truffle Co has no input into the budgeting process.

At the end of October, the managing director decided to hold a meeting and offer staff the choice of either accepting a 5% pay cut or facing a certain number of redundancies. All staff subsequently agreed to accept the 5% pay cut with immediate effect. At the same time, the retailer requested that the truffles be made slightly softer. This change was implemented immediately and made the chocolates more difficult to shape. When recipe changes such as these are made, it takes time before the workers become used to working with the new ingredient mix, making the process **20% slower for at least the first month of the new operation**.

The standard costing system is only updated once a year in June and no changes are ever made to the system outside of this.

→ LRV & LEV

↓
cost/batch

Required:

- Calculate the following variances for Truffle Co:
 - Labour rate planning variance \rightarrow **ProF**
 - Labour rate operational variance \rightarrow **0**
 - Labour efficiency planning variance \rightarrow **2460A**
 - Labour efficiency operational variance \rightarrow **2660P**

(8 marks)

- Assess the performance of the production manager for the month of November. (7 marks)

(15 marks)

Glove Co makes high quality, hand-made gloves which it sells for an average of \$180 per pair. The standard cost of labour for each pair is \$42 and the standard labour time for each pair is **three hours**. In the last quarter, Glove Co had budgeted production of **12,000 pairs**, although actual production was **12,600 pairs** in order to meet demand. 37,000 hours were used to complete the work and there was no idle time. The total labour cost for the quarter was **\$531,930**.

At the beginning of the last quarter, the design of the gloves was changed slightly. The new design required workers to sew the company's logo on to the back of every glove made and the estimated time to do this was **15 minutes for each pair**. However, no-one told the accountant responsible for updating standard costs that the standard time per pair of gloves needed to be changed. Similarly, although all workers were given a 2% pay rise at the beginning of the last quarter, the accountant was not told about this either. Consequently, the standard was not updated to reflect these changes.

When overtime is required, workers are paid 25% more than their usual hourly rate.

Required:

- Calculate the total labour rate and total labour efficiency variances for the last quarter. (2 marks)
- Analyse the above total variances into component parts for planning and operational variances in as much detail as the information allows. (6 marks)
- Assess the performance of the production manager for the last quarter. (7 marks)

(15 marks)

3 Bokco is a manufacturing company. It has a small permanent workforce but it is also reliant on temporary workers, whom it hires on three-month contracts whenever production requirements increase. All buying of materials is the responsibility of the company's purchasing department and the company's policy is to hold low levels of raw materials in order to minimise inventory holding costs. Bokco uses cost plus pricing to set the selling prices for its products once an initial cost card has been drawn up. Prices are then reviewed on a quarterly basis. Detailed variance reports are produced each month for sales, material costs and labour costs. Departmental managers are then paid a monthly bonus depending on the performance of their department.

One month ago, Bokco began production of a new product. The standard cost card for one unit was drawn up to include a cost of \$84 for labour, based on seven hours of labour at \$12 per hour. Actual output of the product during the first month of production was 460 units and the actual time taken to manufacture the product totalled 1,860 hours at a total cost of \$26,040.

After being presented with some initial variance calculations, the production manager has realised that the standard time per unit of seven hours was the time taken to produce the first unit and that a learning rate of 90% should have been anticipated for the first 1,000 units of production. He has consequently been criticised by other departmental managers who have said that, 'He has no idea of all the problems this has caused.'

Required:

- (a) Calculate the labour efficiency planning variance and the labour efficiency operational variance AFTER taking account of the learning effect.

Note: The learning index for a 90% learning curve is -0.1520 (5 marks)

- (b) Discuss the likely consequences arising from the production manager's failure to take into account the learning effect before production commenced. (5 marks)

(10 marks)

32 Kappa Co produces Omega, an animal feed made by mixing and heating three ingredients: Alpha, Beta and Gamma. The company uses a standard costing system to monitor its costs.

The standard material cost for 100 kg of Omega is as follows:

Input	Kg	Cost per kg	Cost per 100 kg of Omega
		(\$)	(\$)
Alpha	40	2.00	80.00
Beta	60	5.00	300.00
Gamma	20	1.00	20.00
Total	120		400.00

Notes

- (1) The mixing and heating process is subject to a standard evaporation loss.
- (2) Alpha, Beta and Gamma are agricultural products and their quality and price varies significantly from year to year. Standard prices are set at the average market price over the last five years. Kappa Co has a purchasing manager who is responsible for pricing and supplier contracts.
- (3) The standard mix is set by the finance department. The last time this was done was at the product launch which was five years ago. It has not changed since.

Last month 4,600 kg of Omega was produced, using the following inputs:

Input	Kg	Cost per kg	Total cost
		(\$)	(\$)
Alpha	2,200	1.80	3,960
Beta	2,500	6.00	15,000
Gamma	920	1.00	920
Total	5,620		19,880

At the end of each month, the production manager receives a standard cost operating statement from Kappa Co's performance manager. The statement contains material price and usage variances, labour rate and efficiency variances, and overhead expenditure and efficiency variances for the previous month. No commentary on the variances is given and the production manager receives no other feedback on the efficiency of the Omega process.

Required:

- (a) Calculate the following variances for the last month:

- (i) the material usage variance for each ingredient and in total; (4 marks)
- (ii) the total material mix variance; (4 marks)
- (iii) the total material yield variance. (3 marks)

- (b) Discuss the problems with the current system of calculating and reporting variances for assessing the performance of the production manager. (9 marks)

(20 marks)

- 3** Spike Co manufactures and sells good quality leather bound diaries. Each year it budgets for its profits, including detailed budgets for sales, materials and labour. If appropriate, the departmental managers are allowed to revise their budgets for planning errors.

In recent months, the managing director has become concerned about the frequency of budget revisions. At a recent board meeting he said 'There seems little point budgeting any more. Every time we have a problem the budgets are revised to leave me looking at a favourable operational variance report and at the same time a lot less profit than promised.'

Required:

- (a) Describe the circumstances when a budget revision should be allowed and when it should be refused. (5 marks)

Two specific situations have recently arisen, for which budget revisions were sought:

Materials

A local material supplier was forced into liquidation. Spike Co's buyer managed to find another supplier, 150 miles away at short notice. This second supplier charged more for the material and a supplementary delivery charge on top. The buyer agreed to both the price and the delivery charge without negotiation. 'I had no choice', the buyer said, 'the production manager was pushing me very hard to find any solution possible!' Two months later, another, more competitive, local supplier was found.

A budget revision is being sought for the two months where higher prices had to be paid.

Labour

During the early part of the year, problems had been experienced with the quality of work being produced by the support staff in the labour force. The departmental manager had complained in his board report that his team were 'unreliable, inflexible and just not up to the job'.

It was therefore decided, after discussion of the board report, that something had to be done. The company changed its policy so as to recruit only top graduates from good quality universities. This has had the effect of pushing up the costs involved but increasing productivity in relation to that element of the labour force.

The support staff departmental manager has requested a budget revision to cover the extra costs involved following the change of policy.

Required:

- (b) Discuss each request for a budget revision, putting what you see as both sides of the argument and reach a conclusion as to whether a budget revision should be allowed. (8 marks)

31 The School Uniform Company (SU Co) manufactures school uniforms. One of its largest contracts is with the Girls' Private School Trust (GPST), which has 35 schools across the country, all with the same school uniform.

Section C – Both questions are compulsory and MUST be attempted

Please write your answers to all parts of these questions on the lined pages within the Candidate Answer Booklet.

- 31** The School Uniform Company (SU Co) manufactures school uniforms. One of its largest contracts is with the Girls' Private School Trust (GPST), which has 35 schools across the country, all with the same school uniform.

After a recent review of the uniform at the GPST schools, the school's spring/summer dress has been re-designed to incorporate a dropped waistband. Each new dress now requires 2.2 metres of material, which is 10% more material than the previous style of dress required. However, a new material has also been chosen by the GPST which costs only \$2.85 per metre which is 5% cheaper than the material used on the previous dresses. In February, the total amount of material used and purchased at this price was 54,560 metres.

The design of the new dresses has meant that a complicated new sewing technique needed to be used. Consequently, all staff required training before they could begin production. The manager of the sewing department expected each of the new dresses to take 10 minutes to make as compared to 8 minutes per dress for the old style. SU Co has 24 staff, each of whom works 160 hours per month and is paid a wage of \$12 per hour. All staff worked all of their contracted hours in February on production of the GPST dresses and there was no idle time. No labour rate variance arose in February.

Activity levels for February were as follows:

Budgeted production and sales (units)	30,000
Actual production and sales (units)	24,000

The production manager at SU Co is responsible for all purchasing and production issues which occur. SU Co uses standard costing and usually, every time a design change takes place, the standard cost card is updated prior to production commencing. However, the company accountant responsible for updating the standards has been off sick for the last two months. Consequently, the standard cost card for the new dress has not yet been updated.

Required:

- (a) Calculate the material variances in as much detail as the information allows for the month of February. (7 marks)

- (b) Calculate the labour efficiency variances in as much detail as the information allows for the month of February. (5 marks)

- (c) Assess the performance of the production manager for the month of February. (8 marks)

(20 marks)

Planning and operational Variance

Q Block Co \rightarrow 165 ✓

data

\rightarrow Economic recession \rightarrow last 2 years

\rightarrow market Specialist \rightarrow price for quantities

\hookrightarrow Std S.P

a) $SP \rightarrow OP/PI \rightarrow C-3$

SPV = Actual unit Sold \times (Std S.P/unit - actual S.P)

~~Std > actual~~ \hookrightarrow Planning \rightarrow "avngaged"

SPV = ~~actual unit sold~~ \times (Std S.P/unit - ~~actual S.P/unit~~)

$$= 26000 \times (41.60 - 39.1)$$

= 65000 adverse

Operational

SPV = Actual unit Sold \times (Actual S.P/unit - ~~actual S.P/unit~~)

$$= 28600 \times (39.1 - 40.40)$$

= 33280 Fav ✓

Sales mix & qty

Sales mix

mat	Actual unit Sold		Mix Var \$	Profit	Mix \$
	in std mix	Sold in actual			
C-1	✓ 30642 (2)	29800	842 A	11.2 (w3)	9130 A
C-2	✓ 28600 (w2)	30400	1800 F	4.2 (w4)	7560 F
C-3	✓ 26558 (w3)	25600	958 A	12 (w6)	11496 A
		85800	—	13366 A	

\hookrightarrow working

total actual unit Sold \times Budgeted unit of that product
total budgeted unit Sold

$$C-1: 85800 \times 30000 = 30642 \text{ units } (\text{w1})$$

$$84000$$

$$C-2: 85800 \times 28000 = 28600 \text{ units } (\text{w2})$$

$$84000$$

$$C-3: 85800 \times 26000 = 26558 \text{ units } (\text{w3})$$

$$84000$$

$$\text{Budgeted Cost} = 174400 \div 43600 \text{ hours}$$

$$\{ (0.2 \times 30000) + (0.6 \times 28000) + (0.8 \times 26000) \}$$

$$OAR = \frac{174400}{43600} = 4 \text{ / much hours}$$

Profitability

$$\text{Profit} = SP - V.C - F.C \rightarrow OAR \rightarrow \text{charge}$$

$$C-1: 30 - 18 - 0.8 = \frac{11.2 \text{ / unit}}{4 \text{ hours / unit}} \rightarrow \text{Profit}$$

$$C-2: 35 - 28.40 - 2.4 = 4.2 \text{ / unit } (\text{w5})$$

$$C-3: 41.6 - 28.4 - 3.2 = 12 \text{ / unit } (\text{w6})$$

mat	Budgeted Sales	Actual units Sold in std mix	Sales Qty Variance		
			Q.V. units	Profit H.D.	Q.V. \$
1	30000	30642	642 F	11.2	7190 A
2	28000	28600	600 F	4.2	2520 A
3	26000	26558	558 F	12	6696 A
					16466 A

C Performance \rightarrow Sales manager

\rightarrow Block Co \rightarrow struggling profitability \rightarrow maintain scenario \rightarrow maintain

\rightarrow Economic recession \rightarrow struggling

\rightarrow looking at variance \rightarrow net variance favorable
 \hookrightarrow performance \rightarrow better/good

Operational and planning

\rightarrow as far as \rightarrow manage performance \rightarrow highlight manager \rightarrow planning variance

dimension \rightarrow Planner \rightarrow fault planning
 \rightarrow Strategic plan

\rightarrow manager \rightarrow operational variances
 \hookrightarrow favorable \rightarrow good ✓

Q Truffle Co \rightarrow H.W \rightarrow Q.SU Co \rightarrow M.I.J 17

Q BolleCo $\checkmark \rightarrow$ 204 \rightarrow Q.Kappa \rightarrow S10 18

Q Gore $\checkmark \rightarrow$ 218 \rightarrow Q.Marsus \rightarrow M.I.J-19

Q Spice $\checkmark \rightarrow$ 302 \rightarrow MT Q

Q SafeSoap $\checkmark \rightarrow$ Dec 12

Q Organic bread Dec 15 ✓

Q Scour Net \rightarrow Pg 300 ✓

$$q.b = \frac{0.035 \times 100000}{35000 \text{ kg}} = \frac{20.7}{\text{kg}}$$

Strategic

Strategic	Actual	Revised
Cost of plastic = 41kg	Cost = 5.25 / kg	Cost = 4 \times 1.02 = 4.81/kg
each unit = 40g \div 1000	usage = 2850 \div 1000 = 0.0285kg	usage = 0.04 kg \times 1.05 = 0.042 kg
Budgeted = 60000	Actual = 100,000	

$$MPV = \text{Actual mat Consumed} \times (\text{Actual price/unit} - \text{Std price/unit})$$

$$= 3500 \times (5.25 - 4) = 4375 \text{ CAD}$$

$$MOV = \text{Std price/unit} \times (\text{Actual qty consumed} - \text{Std qty allowed})$$

$$= 4 \times (2850 - 4000) = 2000 \text{ F}$$

$$\text{Std qty print} \times \text{Actual units}$$

Planning Variance

$$0.04 \text{ kg} \times 100,000$$

$$= 4000$$

$$MPV = \text{Rev std qty allowed} \times (\text{Rev std price/unit} - \text{std price/unit})$$

$$= 4200 \times (4.8 - 4) = 3360 \text{ A} \checkmark$$

\downarrow
Rev std qty per unit \times Actual units produced
 $0.042 \times 100,000$
 $= 4200 \text{ kg}$

$$MOV = \text{Std price/unit} \times (\text{Rev std qty allowed} - \text{std qty allowed})$$

$$= 4 \times (4200 - 4000) = 800 \text{ A} \checkmark$$

Operational

$$MPV = \text{Actual qty Consumed} \times (\text{Actual price/unit} - \text{Std price/unit})$$

$$= 3500 \times (5.25 - 4) = 1575 \text{ A} \checkmark$$

$$MOV = \text{Rev std price/unit} \times (\text{Actual qty consumed} - \text{Rev std qty allowed})$$

$$= 4.8 \times (3500 - 4200) = 3360 \text{ F} \checkmark$$

Production manager

\rightarrow looking at basic variances \rightarrow adverse net \rightarrow performance \rightarrow not be suitable but when situation is analyzed \rightarrow situation

\rightarrow planning variance \rightarrow faulty planning
 \hookrightarrow planner \rightarrow manager x

\rightarrow production manager \rightarrow operational variance
 \hookrightarrow MOV \rightarrow production task

\hookrightarrow since MOV \rightarrow favorable \rightarrow production manager
 \downarrow
 \checkmark good

→ Block C → SAB Depty Date:

As far as business performance is concerned Stock Co. is struggling to maintain profitability due to the economic recession in the country which leads towards reduction in household income automatically reducing buying power of the customer.

With regards to sales mix and quantity variance it suggests that the sales volume variance favourable which suggests that sales volumes were higher than budgeted however capacity has been sold a greater quantity which has lower margins.

As far as managers' performance is concerned it should be noted that sales manager can only be held accountable for those variances which he/she can control. The standard selling prices are set by the consultant rather than the sales manager therefore should only be held responsible for operational variances.

Given that the net operational variances are favourable by 23360. It appears that sales manager has performed well.

The consultants predictions were inaccurate and seems the reason that lead towards adverse price variances.

Xijazi

Q Staffing 60

Std	Actual	Actual
lab cost = 6/batch		
hrs/batch = 30 min = 0.5 hrs	hours = 12000	hrs/batch = 0.6
Production = 24000	lab cost = 136800	0.5 + 12 hrs
Cost/hrs = $\frac{6}{0.5} = 12/\text{hrs}$	Production = 25500	
	Gst / hrs = 11.4	Cost / hrs = 11.4
		12.951.

$$LRV = 7200 \text{ fav}$$

$$LEV = 21000 \text{ adv}$$

Planning =

$$LRV = 7380 \text{ fav}$$

$$LEV = 24600 \text{ adv}$$

Planned

$$\underline{LRV = 0}$$

$$\underline{LEV = 3470 \text{ fav}}$$

3600 adv x

3600 fav

Planned

Actual - std hours allowed

$$= \text{std hrs} \times (\text{actual hrs} - \text{std hrs allowed})$$

- std hrs

allow)

$$12 \times (12300 - 10750)$$

$$\begin{aligned}
 LEV &= \text{std lab rate/hrs} \times (\text{actual hrs worked} - \text{std hrs allowed}) \\
 &= " \times (\text{actual hrs allowed} - \text{std hrs allowed}) \\
 &= 11 + (40400 - 37800) \\
 &= 1100 \text{ adv} \quad 325 \times 12600 = 40950 \\
 &\quad 3 \times 12600 = 37800
 \end{aligned}$$

$$= 160000 \times (17 - 17) = 0$$

$$SVCV = \text{Std Cost/unit} \times (\text{Std Sales units} - \text{Actual Sales units})$$

$$= 7 \times (180000 - 160000) = 140000 \text{ A}$$

Market Size Variance

Operational

$$SPV = \text{Actual unit sold} \times (\text{Rev/std/unit} - \text{Actual s.P/unit})$$

$$= 176000 \times (17 - 16.67) = 105600 \text{ A}$$

$$SVCV = \text{Rev/std Cost/unit} \times (\text{Rev/std Sales} - \text{Actual Sales})$$

$$= 7 \times (160000 - 176000) = 112000 \text{ F}$$

↳ Market Share Variance

(c) looking at Variances (a) → doesn't seem up to mark → Net Sales Variance → adverse

↳ broken down → situation different

→ planning Variance → planning

↳ planner less responsible

→ Operational Variance → fav 112000 → (not fav)

↳ market share

Actual = 176000

$\frac{\text{Actual}}{\text{Budgeted}} = 160000$

↳ Actual Sales

sw std → performance good

→ Mat Mix & Yield Variance → 2 Ppt Papers

→ Sales Mix & Qty Variance → 1 Ppt paper

(i)

→ Planning & operational Variance → last 10 attempts

(d) Safe Soap → Sep / Dec 14

Answer

Mat Mix Variance ^{always}

mat	actual q/t instd	actual q/t instd	act	M.V	\$	M.V
-----	------------------	------------------	-----	-----	----	-----

Lye	33613 ✓	34080	466 A	10	4666.6	
Coconut	80672 ✓	83282	2560 A	4	10240	
Shea	67226	64200	3026 F	3	(9082)	
		181512	actual		5826	
					$0.25 + 0.6 + 0.5 = 1.35$	
					$L = 0.25 \times 181512 = C = 0.6 \times 181512$	
					1.35	

Material Yield Variance

mat	std q/t allowed	Actual q/t instd	Yield	Rate	Variance
Lye	32000	33613	326 F	10	3866 F
Co	81600	80672	928 F	4	3712 F
Sh	68000	67226	773	3	2319 F

↳ Std q/t per unit × actual unit produced

$$\text{Lye} = 0.25 \times 136000 = 34000$$

$$\text{CoCo} = 0.6 \times 136000 = 81600$$

$$\text{Shea} = 0.5 \times 136000 = 67226$$

Indeed, mix change will have significant impact on demand - Sales Volume have been declining as suggested by sales manager, which led to adverse variance 22000 A

→ Change in mix led to changed shaped soap which led to customer dissatisfaction and there might be number of other reasons too. Since, 22000 A is a significant variance so it should be taken to board for suitable recommendation.

(b) i

$$\text{Mix Variance} = 6000 \text{ ad. v.} \rightarrow \text{Customer Satisfaction} \times$$

$$\text{Sales Volume} = 22000 \text{ ad. v.}$$

Answer

(b) ii

A material mix Variance arises due to change of mix from std. It is said to be adverse when expensive material is used and cheaper material is less used. Since, safe soap variance for Sept & Oct are adverse therefore it could be said that safe soap have used expensive material in mix.

Material yield Variance indicates the output being achieved by entity. It is favourable when entity have produced more output from budgeted. It also suggest that entity have obtained maximum output from minimum input. In both Sept and Oct's yield Variance is favourable that means input produced higher level of output.

(b) ii Sales manager → justifiable

material mix and yield Variance provides information, but they did not provide quality issue raised because of mix.

(c) QBC Sep / Dec 15

per kg rate

mat	actual q/t instd	actual q/t instd	m.v	rate	m.v
WP	420.86	408.5	12.36 F	1.80	22.5 F
WH	140.29	152	11.71 A	2.20	25.7 A
YE	9.25	10	0.65 A	20	13 A

$$\downarrow 460 + 160 + 10 = 630 \text{ kgm}$$

$$WP = \frac{460}{610} \times 570.5$$

$$WH = \frac{160}{610} \times 570.5$$

$$= 420.8$$

$$= 140.29$$

$$YE = \frac{10}{610} \times 570.5 = 9.25$$

mat	std q/t allowed	Actual q/t instd	v.v	rate	v.v
WP	427.5	420.86	6.64 F	1.8	11.95 F
WH	142.5	140.29	2.21 F	2.2	4.96 F
YE	9.5	9.25	0.15 F	2	3 F

↳ Single product Variance

std q/t allowed × total actual q/t used
total std q/t

$$WP = \frac{460}{610} \times 570.5 = 427.5$$

$$LF = \frac{10}{610} \times 570.5 = 0.15$$

Kindly submit assignments
 exam software → Variance → Post-figures
 Godel (June 2014, amended) → Attn on exam software 49 mins

Exhibit 1: Company background and strategy

Godel Goodies (Godel) manufactures a variety of own-label sweets for the two largest supermarket chains in Scotland. The business makes several different flavours of the same basic product. The strategy of the business has been to be a cost leader in order to win the supermarkets' business. The sales of Godel vary up and down from quarter to quarter depending on the state of the general economy and competitive forces. Most of the sweet manufacturers have been in business for decades and so the business is mature with little scope to be innovative in new product development. The supermarkets prefer to sign suppliers to long-term contracts and so it is difficult for new entrants to gain a foothold in this market. The management style at Godel is very much command-and-control which fits with the strategy and type of business. Indeed, most employees have been at Godel for many years and have expressed their liking for the straightforward nature of their work.

Exhibit 2: Variance analysis

The chief executive officer (CEO) of Godel has asked your firm of accountants to advise them as their finance director (FD) will be absent for several months due to a recently diagnosed illness. As the CEO is preparing for the next board meeting, they have obtained the operating statement and detailed variance analysis from one of the junior accountants (Appendix 1). The CEO is happy with the operating statement but wants to understand the meaning of the detailed operational and planning variances, given in Appendix 1, for the board meeting. They also need to know what action should be taken as a result of these specific variances.

Exhibit 3: Budgeting process

The FD had been looking at the budgeting process before they fell ill. The CEO has decided that you should help them by answering some questions on budgeting at Godel.

Currently, the budget at Godel is set at the start of the year and performance is measured against this. The company uses standard costs for each product and attributes overheads using absorption costing based on machine hours. No variations are allowed to the standard costs during the year. The standard costs and all budget assumptions are discussed with the relevant operational manager before being set. However, these managers grumble that the budget process is very time-consuming and that the results are ultimately of limited value from their perspective. Some of them also complain that they must frequently explain that the variances are not their fault. (Managers think variances are not our fault)

The CEO wants to know your views on whether the current way of budgeting is appropriate and whether the managers' complaints are justified. They are satisfied that there is no dysfunctional behaviour at Godel which may lead to budget slack or excessive spending and that all managers are working in the best interests of the company.

In the last few months, the FD had been reading business articles and books and had mentioned that there were a number of organisations which were trying to go 'beyond budgeting'.

The CEO is concerned that they do not understand what budgeting does for the business and this is why they want you to explain what are the benefits and problems of budgeting at Godel before considering replacing it with a 'beyond budgeting' approach. They want a recommendation on whether or not to adopt beyond budgeting.

Exhibit 4: Appendix 1

(Note: You may assume that all figures in this Appendix are correct.)

Operating statement for Godel

Period: May 20X4

	\$	\$
Budgeted profit	214,200	
Budget fixed production costs	264,180	
Budgeted contribution	478,380	
Sales variances		
volume	20,100	Adverse
price	8,960	Adverse
	29,060	Adverse
	449,320	

Actual sales minus standard cost of sales

	Favourable	Adverse
	\$	\$
Variable cost variance		
Material	price	4,200
Labour	usage	3,500
	rate	1,100
	efficiency	24,480
Variable overhead	idle time	5,600
	expenditure	1,080
	efficiency	3,060
	32,140	10,880
	21,260	
Actual contribution	470,580	

Actual profit

	\$	
Total variable cost variances	Planning 20,680	Favourable
	Operational 580	Favourable
Sales price variances	Planning 15,600	Adverse
	Operational 6,640	Favourable
	180,156	

→ SBL → skills matrix

Required

Respond to the CEO's requests for work on the following areas:

(a) Analysing variances into planning and operational elements. (6 marks)

(b) Evaluating the current budgeting system and the beyond budgeting proposal. (14 marks)

Professional marks will be awarded for the demonstration of skill in analysis and evaluation, scepticism and commercial acumen in your answer.

(Total = 25 marks)

3-4 good points

8-9 good points

Variance is tested in APM → it gets mixed with budget

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Going Beyond budgeting involves replacing the annual systems of centrally created budget with more flexible systems of targets. Performance measurement changes from monitoring variances from the budget towards measuring achievement of strategic goals. Beyond budgeting adds value and assess performance against suitable benchmarks.

The system will use forecast produced and revise it more regularly than the annual budget by line managers, it will devolve decision making. The forecast produced are often more important for cash flow monitoring rather than cost control. The targets are intended to guide rather than constrain the line managers, thus improving their motivation.

The approach at godel would appear to be inappropriate for a number of reasons :

There is no indication of regularly changes in the environment therefore annual budgets might not be getting changed frequently.

There does not appear to be need of creativity at godel, instead the focus is on cost control and so traditional budgeting will suit this well

The management style of beyond budgeting requires power to be denominated to managers and so traditional budgeting will contradict with this style

Overall, then there are sufficient benefits and many barriers to going beyond budgeting at GODEL and it is not recommended.

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Godel

Requirement A - Planning and Operational Variance

Planning variances are those which arise due to inaccurate forecast or standards that were set while original budget setting. Operational variances arises due to decisions of operational managers. A planning variance is the difference between original standards and the revised standards. An operational variances are the differences between revised standard and the actual performance.

The total variable cost variance consider all cost together so its unlikely to identify the exact reasoning that the variances arises. It is of limited value and should be used to point more detailed analysis to identify the specific source of the variance. Currently, At Godel, The standard costs have been set too high and it appears that the bulk of cost improvements can be attributed this. The operational managers have had a little impact in driving down costs overall.

The sales price variances indicates how far sales prices were misestimated in the budget(Planning) and how well the sales managers have done in negotiating high prices with customers (Operational). It appears that the budget was overoptimistic in setting too high an initial price but sales manager have done well in negotiations with customers.

The initial price setting process should be examined as it may have been due to faulty market intelligence about price setting of competitors or commercial situation of customers.

Requirement B - Purpose and Benefits of Budgeting & Beyond Budgeting

Budgeting is a key control tool for management and of particular importance in controlling costs in businesses such as godel which is seeking to be a cost leader. At Godel, it is succeeding in this as total costs show a favourable variance. Budgets help to communicate and coordinate all the management activities within the company towards a single plan.

The budgets helps to attribute responsibilities for performance, such as MUV favourable variance indicates fewer raw material required than was planned and this reflects that production manager cuts down wastage and shows greater efficiency through buying good quality material.

The participatory nature of budget process will help to motivate managers to achieve budget figures which they themselves helped a lot to set. It is important for this purpose that the budget is achievable or else it is demotivating. Budgets highlights the areas of improvements and they tell us corrective action in the right direction.

There are several problems with budgeting at Godel

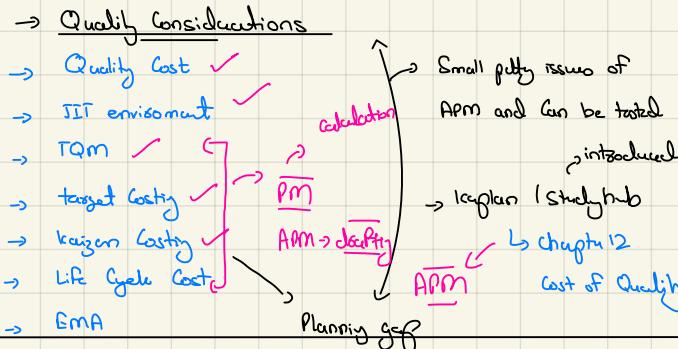
The time consuming nature of the process which is unusual as the business is mature and stable and so budget setting should be a complex process. Managers often see it as lengthy exercise from the fact that they see little benefit coming from work involved in forecasting.

The planning variance explain bulk of variances at godel and so the operational managers have good reason to be concerned as their performance affects operational variances only

The use of standard cost in budgeting could discourage systems of continuous improvement which would help GODEL to achieve aim of being cost leader through efficiency gains. Its unnecessary sometimes to change the standard cost if there is stable environment therefore godel might not change the costs set at budget as they operate in a stable environment.

Beyond Budgeting

about:blank



Quality Cost

A cost to make sure quality is put in for an desired product

Customer plays the role making quality

Certain Cost to be discussed

Conformance Cost

Prevention Cost

Cost incurred on activities to reduce cost -

↳ Some control → quality is fine

Appraisal Cost

Cost incurred on activities to identify defects

↳ after final product → inspection of a product

Non Conformance Cost

It increases when product is as per quality

Internal Failure Cost

Identification of defects in the products before product is shipped to customer.

External Failure Cost

It arises when defective products are shipped to customers.

3.3 Just-in-time

What is just-in-time?

JIT is a demand-pull system of ordering from suppliers which aims to reduce inventory levels to zero.

JIT applies to both production within an organisation and to purchasing from external suppliers:

JIT purchasing is a method of purchasing that involves ordering materials only when customers place an order. When the goods are received they go straight into production.

JIT production is a production system that is driven by demand for the finished products (a 'pull' system), whereby each component on a production line is produced only when needed for the next stage.

As with TQM, JIT is often used in conjunction with other continuous improvement methods.

Illustration 5 – Toyota

Toyota pioneered the JIT manufacturing system, in which suppliers send parts daily or several times a day and are notified electronically when the production line is running out. More than 400 trucks a day come in and out of Toyota's Georgetown plant in the USA, with a separate logistics company organising shipment from Toyota's 300 suppliers – most located in neighbouring state within half a day's drive of the plant. Toyota aims to build long-term relationships with suppliers, many of whom it has a stake in, and says it now produces 80% of its parts within North America.

Illustration 6 – JIT and service operations

Although it originated with manufacturing systems, the JIT philosophy can also be applied to some service operations. Whereas JIT in manufacturing seeks to eliminate inventories, JIT in service operations will seek to eliminate, for example, internal or external queues of customers or wasteful motion.

Requirements for successful operation of a JIT system

• High quality and reliability – disruptions cause hold ups in the entire system and must be avoided. The emphasis is on getting the work right first time:

- Highly skilled and well trained staff should be used.
- Machinery must be high quality and fully maintained.

– Long-term links should be established with a small number of suppliers, who act as collaborative partners, in order to ensure a reliable and high quality service and to minimise any stoppages in production.

This will increase prevention costs but other quality-related costs should reduce (hopefully to a greater extent). ↗ Customer not paid for this action

Elimination of non-value added activities for example, value is not added whilst storing the products and therefore inventory levels should be minimised.

Speed of throughput – the speed of production should match the rate at which customers demand the product. Production runs should be shorter with smaller stocks of finished goods.

Flexibility – a flexible production system and workforce is needed in order to be able to respond immediately to customers' orders.

Lower costs – another objective of JIT is to reduce costs by:

- Raising quality and eliminating waste. ↗ Unfinished products
- Achieving faster throughput.
- Minimising inventory levels. ↗ Low holding cost

JIT and supplier relationships

A company is a long way towards JIT if its suppliers will guarantee the quality of the material they deliver and will give shorter lead-times, deliver smaller quantities more often, guarantee a low reject rate and perform quality-assurance inspection at source. Frequent deliveries of small quantities of material to the company can ensure that each delivery is just enough to meet its immediate production schedule. This will keep its inventory as low as possible. Materials handling time will be saved because there is no need to move the stock into a store, the goods can be delivered directly to a workstation on the shop floor. Inspection time and costs can be eliminated and the labour required for reworking defective material or returning goods to the supplier can be saved.

Successful JIT

The successful JIT manufacturer deliberately sets out to cultivate good relationships with a small number of suppliers and these suppliers will often be situated close to the manufacturing plant. It is usual for a large manufacturer that does not use the JIT approach to have multiple suppliers. When a new part is to be produced, various suppliers will bid for the contract and the business will be given to the two or three most attractive bids.

A JIT manufacturer is looking for a single supplier that can provide high quality and reliable deliveries, rather than the lowest price. This supplier will often be located in close proximity to the manufacturing plant.

There is much to be gained by both the company and its suppliers from this mutual dependence. The supplier is guaranteed a demand for the products as the sole supplier and is able to plan to meet the customer's production schedules. If an organisation has confidence that suppliers will deliver material of 100% quality, on time, so that there will be no rejects, returns and hence no consequent production delays, usage of materials can be matched with delivery of materials and stocks can be kept at near zero levels.

Jaguar, when it analysed the causes of customer complaints, compiled a list of 150 areas of faults. Some 60% of them turned out to be faulty components from suppliers. One month the company returned 22,000 components to different suppliers. Suppliers were brought on to the multidisciplinary task forces the company established to tackle each of the common faults. The task force had the simple objective of finding the fault, establishing and testing a cure, and implementing it as fast as possible. Jaguar directors chaired the task forces of the 12 most serious faults, but in one case the task force was chaired by the supplier's representative.

JIT evaluation

It is important that you evaluate JIT. Consider the question below.

Test your understanding 5

Required:

Explain the advantages and disadvantages to an organisation of operating a JIT system.

The impact of JIT on management accounting

The introduction of a JIT system will have a number of effects on the costing system and performance management.

↗ high quality stds

- Allowances for waste, scrap and rework are moved to the ideal standard, rather than an achievable standard.
- Costs are only allowed to accumulate when the product is finished.
- The inevitable reduction in inventory levels will reduce the time taken to count inventory and the clerical cost.
- Minimal inventory makes it easier for a firm to switch to backflush accounting (a simplified method of cost bookkeeping).

- Traditional performance measures such as **inventory turnover** and individual incentives are replaced by more appropriate performance measures, such as:

- total head count productivity
- **inventory days**
- ideas generated and implemented
- customer complaints
- bottlenecks in production
- the amount and effectiveness of staff training.

more about JCF's
See the book
MSC

The other strategies that can be used include efficiency strategies, which are designed to increase profits (or throughput) by making better use of resources in order to reduce cost.

Also, it's possible to reduce a planning gap that is measured in terms of profit by directly of loss making business units. This would obviously not be the case when planning gap is measured as sales volume.

The **management accounting system** will need to be capable of producing performance and control information consistent with the JIT philosophy.

Gap Analysis

Gap analysis identifies planning gap - Difference between desired and expected performance. The planning gap most often measured in terms of demand but may also be reported in terms of net profit, return on capital employed etc.

Predicted demand of 1000 units \rightarrow Actual \rightarrow 800 units

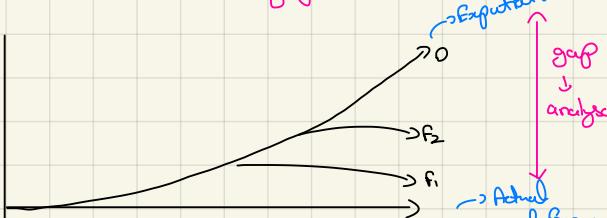
gap of 200 units

target score = 25.1

Actual score = 20.1

gap 5.1

earnings



Some of the reasons can be controllable while some of them might be uncontrollable.

The defined gap can be reduced by using ie by making different strategies which are as follows

Market penetration, Market development, Product development, Diversifications

Topic - Target Costing → Modern technique
these should be an approach in which **cost control** should be on priority from beginning.

↳ **in fact before launch**

$$\text{Cost estimate} = \text{SP} - \text{Profit margin}$$

(
↳

$$\text{Target Cost} = \text{SP} - \text{Profit margin}$$

Cost + Pricing
↑
opposite technique

An Effective idea of cost reduction

$$= \text{Cost} + \text{margin}$$

↓
Price

Concept of target cost is that an entity should focus on what a new product should cost? rather than what a new product does cost?
↳ Actual production

Cost reduction in an effective manner so that quality of a product should not be impacted because if quality is compromised target costing programme will fail.

How target Cost is implemented? → **pm** → calculation
five step approach
Apm → discussion elements

- ① Determine Selling price → visiting market
- ② Estimate Profit margin → own judgement
- ③ Deduct Profit margin from Selling price to get **target cost**.
- ④ Calculate **Actual Cost** of product
- ⑤ Compare **target cost** with **Actual cost**

$$\text{Eg 1} \quad 30 \uparrow \quad 29 \downarrow = 0$$

↳ target is achieved

$$\text{Eg 2} \quad 30 \downarrow \quad 31 \uparrow = 1$$

↳ target is not achieved

If Actual cost is greater than target cost then **Cost gap** arises which needs to be finished / eliminated.

↳ difference of Actual Cost vs Target Cost

How to Eliminate Cost gap

→ it should be noted that Cost gap cannot be eliminated by **increasing quality** & cost gap should be reduced by increasing SP or reducing profit margin.

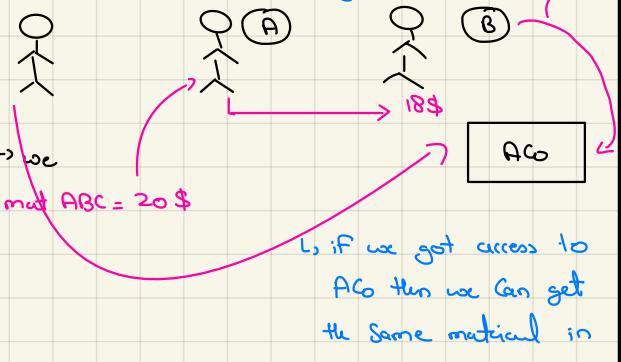
SP ↓ → **target Cost**
pm ↓ → **target Cost**

breakdown actual cost → highlight → cost reduction done

Cost gap should be eliminated in following ways

- ① more towards economies of scale.
↳ bulk purchases → reduced rate → med cost!
↳ Cost gap can be finish
↳ good quality at a good rate
- ② reduce wastage / **wastage review** → extra revenue
↳ less material will consume → med Cost will decline
→ Cost gap will finish

③ reduce elements of Supply Chain



④ use of Substitute products

- ↳ Substitute are cheaper
- ↳ no compromise on quality

Value Analyses / Value engineering → **Cost Controlling** **value analysis** **value engineering**

→ This Concept Suggests that a product should be critically **examined**, separate two main functions / features

- ↳ Value added feature
- ↳ Non Value added feature

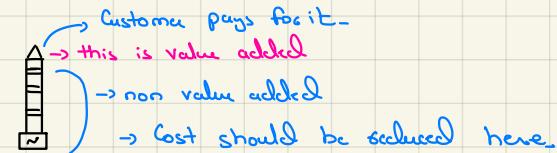
Value added feature

→ important in the eyes of customer

→ not important in the eyes of customer

Value analyses suggests that Cost should be reduced in non value added features

Eg



Target Costing in Service industries

Services have Special characteristics

- ① Intangibility → intangible, cannot be touched
- ② Heterogeneity → inconsistency
- ③ Simultaneity → at the same time consumed / delivered
- ④ Perishability → Cannot be stored
- ⑤ Ownership → transfer of ownership

→ target costing provides less favourable grounds on service industries due to characteristics.

→ target costing is mainly applied on new products and in service industries, new products are very rare

→ focus on cost reduction is from the start

Advantages

→ Since the implementation of Target costing, 25% initial implementation would require training of employees which would increase cost.

→ Logistic advantage, increase cost.

→ Better decision making → initial implementation cost can be taken would lead to errors as cost are focussed from been done by employees which would increase time taking technique satisfaction cost.

disadvantages

Topic → Life Cycle Costing → modern technique

it's a modern technique which focuses on product profitability rather than period profitability.

what is life cycle costing?

life cycle costing is a modern technique which enhances profit reporting. This technique suggests that organisation should avoid reporting period profitability.

↳ Per year profit → yearly profits do not determine product profitability.

Product performance is hidden

→ There should be a culture of product profitability - every products separate P&L should be maintained and each product profit should be reported.

↓

Entity should estimate whole life cycle revenue of product then entity should estimate whole life cycle cost then entity should deduct whole life cycle cost from whole life cycle revenue to get whole life cycle profit.

↳ profit → same P&L entry

what is life cycle

stages

Complete life of product → Development
→ introduction
→ growth
→ maturity
→ Decline

Development

In this stage, cost is incurred but no revenue is generated - cost is higher in this stage.

Entity is unaware of product - therefore heavy marketing is required in this stage - Marketing / Advertising costs are higher in this stage.

Steps

- ① Eliminate culture of period profitability, introduce culture of product profitability.
- ② Whole life cycle cost & revenues of each product should be estimated.
- ③ Calculate whole life cycle profit by deducting whole life cycle cost from whole life cycle revenue.
- ④ Compare whole life cycle profit with actual life cycle profit to determine product perform.

Growth

In this stage, demand shoots up, unit cost are lowered - activity levels increases, overheads are charged on higher units.

In this stage, entity needs to aware of competitors, they will try to enter in market.

Maturity

In this stage, maximum demand of product is achieved - demand is slowed down - many competitors are available - price competitions have started -

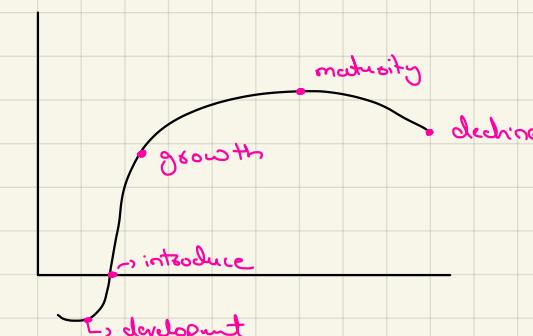
An entity should try to retain its market share.

Decline

Demand is not at all available - The product needs to be replaced - new product needs to be launched.

Eg

Samsung → S1, S2, S3, S4, S5
↳ Segment



Advantages

→ True profit of each product will be determined.

→ Initial implemented will surprise to employees which is lost.

→ Better decision making regarding prices, viability as now we have true profit.

→ Initial implementation leads to error done by employees which would incur satisfaction cost.
→ Time taking technique

→ Single P&L

→ multiple P&L's of multiple products

- (1) To provide education which promotes intellectual initiative and produces confident and ambitious graduates who have reached the highest academic standards to prepare them for success in life and the workplace

There are various performance indicators which can be looked at to ascertain whether RU is meeting this strategic aim. First, question 1 of the survey shows that 83% of students think that the course is intellectually stimulating and the quality of teaching is high. This has gone down by three percentage points since 20X5, which is not good.

In the NOS survey, the percentage of graduates agreeing that the course has developed them as a person has increased from 80% in 20X5 to 82% in 20X6. This would indicate that RU is indeed developing confident and ambitious graduates.

However, the number of graduates achieving first class degrees in 20X6 has fallen vastly from 28% to 20%. Given that the entry requirements were only relaxed in 20X6, this should not have had any impact on results. This infers that the quality of teaching may have declined and the ratio of students to academic staff has increased from 35:1 to 40:1. It appears that, although many new students were recruited in 20X6, there were not enough new academic staff recruited to deal with the influx of students. This is shown by the fact that student numbers increased by 13% but academic staff costs only increased by 6%.

As there was presumably a pay rise in the year too, it is clear that a proportionate amount of new staff were not recruited. This failing is also reflected by the fall in the answer to question 2 from 86% to 82%, with students being less satisfied in 20X6 with the advice and support they have received. Also, the staff retention rate has gone down in 20X6, meaning that staff are less familiar with RU and therefore more likely to provide a fragmented service.

However, in 20X5 74% of employers were happy with the graduates they recruited, in 20X6 this dropped to 72%. In addition, in 20X5 only 65% of students have managed to obtain graduate jobs within a year compared to previous years. Given that RU has relaxed the entry requirements for students in 20X6, this may mean that its 20X6 recruits are not as well qualified as its 20X5. This could mean that in the future the number of graduates obtaining graduate jobs within a year and the satisfaction percentages of employers could fall further. This decision has meant that there has been a 23% increase in fee income, but it compromises RU's ability to meet its first strategic aim.

- (2) To provide an organised, efficient learning environment with access to cutting edge technology and facilities

As regards premises, the money spent on maintaining these has decreased by 10% in 20X6, despite the increased student numbers. In the NOS survey, the percentage of students satisfied with these facilities has gone down nine percentage points from 92% to 83%. This suggests that this particular strategic aim has been neglected. Students seem far less satisfied with the way that the courses are run and administered now, with a fall of nine percentage points in 5 answers to question 4. Administration staff costs have only increased by 5% despite a 13% increase in student numbers and, presumably, a pay rise during the year. It can be inferred that staff are under increasing pressure and unable to cope with the increased numbers. This is again reflected by the fall in the staff retention rate from 90% in 20X5 to 75% in 20X6.

- (3) To be a leader in sustainable business practices which protect the environment and support local people

As with the above strategic aim, this one also seems to have been a little forgotten in 20X6. In 20X5, RU won an environmental award for its campuses. It also took part in a food sharing initiative which helped the local community. It has now got rid of its recycling bins and ceased to be involved in the food share project. RU's spending on sustainability and community assistance has actually halved in 20X6. This decline in activity is partly attributable to staff shortages. All in all, this is not very good as RU is now failing to meet one of its main strategic aims.

- (4) To provide attractive, innovative conference and event facilities, attracting clients both nationally and internationally

Conference and event income has gone up by 13% in 20X6, which is a good increase for RU. It has managed to control its costs relating to these events well too, since these have only increased by 4%. RU has also won an award for its conference facility and attracted a number of new clients. RU therefore appears to be focusing well on this strategic aim.

- (5) To be recognised both nationally and internationally for the scope and relevance of their research

Income from research at RU has actually gone down by 13% this year, as have the associated costs. Whilst a local university has won an award for their contribution to research, RU has not been successful in this regard. The suggestion is that this aim has not been focused on in 20X6.

Overall satisfaction

In addition to the above, it should be considered that the overall satisfaction percentage for students has decreased from 83% to 81%. This could have serious implications for RU as it is the main performance indicator used both internally and externally to assess how RU is performing. As well as meaning that RU may well now attract fewer students, it will also have an impact on the fees which can be charged to students in future years. The university needs to consider how it can improve the service it is providing in order to improve overall satisfaction.

Calculations

	2016 \$m	2015 \$m	% increase/ decrease
Income			
Tuition fees	148	135.6	9%
Research grants	3.5	4.5	(22%)
Conferences and other events	18	16	13%
Total income	169.5	156.1	9%
Expenditure			
Academic staff costs	80.8	76.2	6%
Administration staff costs	50.4	48	5%
Premises, facilities and technology costs	7.6	8.4	(10%)
Research grants	3.1	4	(23%)
Sustainability and community assistance	1.2	2.4	(50%)
Total expenditure	151.4	147	3%
Surplus	18.1	9.1	99%
Student numbers	27,000	24,000	13%

ACCA Marking scheme

Calculations Strategic aims discussion	Marks
Total	4 16 20

→ suggest in discussion

Robinholt University is one of the largest and most popular universities in the country of Richport. It had 27,000 registered students in 20X6, whereas in 20X5, the number of registered students was only 24,000. Robinholt University managed to increase its student numbers in 20X6 by making the entry requirements for students slightly lower than in previous years. All courses at the university last for three years.

Robinholt University has five strategic aims:

- To provide education which promotes intellectual initiative and produces confident and ambitious graduates who have reached the highest academic standards to prepare them for success in life and the workplace.
- To provide an organised, efficient learning environment with access to cutting edge technology and facilities.
- To be a leader in sustainable business practices which protect the environment and support local people.
- To provide attractive, innovative conference and event facilities, attracting clients both nationally and internationally.
- To be recognised both nationally and internationally for the scope and relevance of their research.

PM: PERFORMANCE MANAGEMENT

Extracts from the university's income statement for the last two years are as follows:

	20X6 \$ million	20X5 \$ million
Income		
Tuition fees	148.0	135.6
Research grants	3.5	4.5
Conferences and other events	18.0	16.0
Total income	169.5	156.1
Expenditure		
Academic staff costs	80.8	76.2
Administration staff costs	50.4	48
Premises, facilities and technology costs	7.6	8.4
Event and conference costs	8.3	8.0
Research grants	3.1	4.0
Sustainability and community assistance	1.2	2.4
Total expenditure	151.4	147.0
Surplus	18.1	9.1

Every year, final year students complete an external survey run by the National Organisation for Students. In this, they have to agree or disagree with statements made. Extracts from this for the last two years are shown below (the percentage rates show the number of students who agreed with the statements made):

	20X6	20X5
Teaching		
(1) The course is intellectually stimulating and quality of teaching high	83%	86%
Academic support		
(2) I have received good advice and support with my studies from academic staff	82%	86%
Organisation and management		
(3) The course is well organised and its administration is good	81%	90%
Learning resources		
(4) The standard of rooms, facilities and equipment is good	83%	92%
Personal development		
(5) The course has helped me develop as a person	82%	80%
Overall satisfaction		
(6) Overall, I am satisfied with the quality of the course	81%	83%

The 'overall satisfaction' percentage is used by the Education Authority to set the maximum level of tuition fees that a university can charge each year and is seen as the main measure of success both internally and externally.

Other key information

	20X6	20X5
Students graduating with a First Class Honours degree (highest class attainable)	20%	28%
Employers happy with the graduates from Robinholt University	72%	75%
Ratio of students to staff members	40:1	35:1
Staff retention rate	75%	90%

The staff retention rate in 20X5 was consistent with previous years. Data gathered from students who graduated in 20X5 showed that 65% of students found a graduate job within one year of leaving compared to 68% of 20X4's graduates.

In 20X5, Robinholt University won the 'Green Environmental' award for their campuses, which all have extensive recycling facilities. Students were also involved in a local 'Grow to Give' food sharing project that year, which provided thousands of pounds worth of fresh produce to food banks offering food to poorer residents. Due to staff shortages, the university was not involved in this project in 20X6. The recycling bins have also been abandoned because of the cost of using them.

Every year, the University Research Council issues a range of prestigious awards for contributions to research. One of Robinholt University's main competitors in the area won an award in 20X5 for their contribution to some pioneering research on genetics. Robinholt University has yet to win an award for research. However, in 20X5 it did win an 'Innovation' award for its new, innovative conference facilities which have attracted a number of new clients in the last year.

Required:

Using Robinholt University's five strategic aims, assess its performance for 20X6.  

Note: There are 4 marks available for calculations and 16 marks for discussion.

(Total: 20 marks)

Forecasting → MA / PM / APM

→ 172

Forecasting is closely related to budgeting - Forecasting is more beyond than budgeting. (Syu / logem) analysis

A number of forecasting methods

→ High/Low method → breakdown of FC & PC so that you can predict cost of estimated number of units.

→ Regression analysis → more accurate than high/low. Forecasting can be done where there is linear relationship b/w two variables.
e.g. speed and time
height and weight

→ Time series analysis → analysis of past data, past patterns, seasonal effects, cyclical variations to predict figures.

→ Learning curve model → learning effect account for in calculating labour cost.

Correlation & Regression

What is Correlation?

Two variables are said to be correlated to each other if change in value of any one variable is accompanied by change in value of other variable.

e.g.

→ height and weight

→ speed and time

→ units and cost

??

Scin & books ?

Scin & umbrella

Scin & Samosa ?

Types of Correlation

① Positive Correlation

low values of one variable are associated with low values of other variable and high values of one variable are associated with high values of other variable.

direct relationship

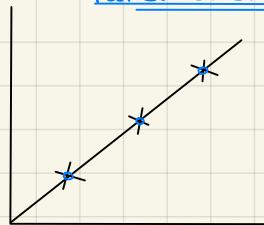
② Negative Correlation

low values of one variable are associated with high values of other variable and high values of one variable are associated with low values of other variable.

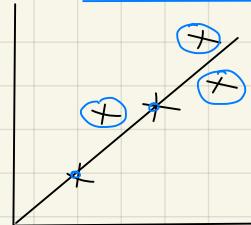
indirect relationship

Degrees of Correlation

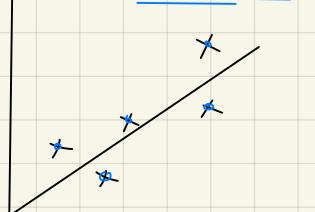
Perfect Correlation



Partial Correlation



No Correlation



Correlation & Regression

what is Correlation

Two variables are said to be correlated to each other if change in value of any one variable is accompanied by change in value of other variable.

e.g.

- height and weight
- speed and time
- units and cost

Types of Correlation

→ direct

① Positive Correlation

low values of one variable are associated with low values of other variable and high values of one variable are associated with high values of other variable.

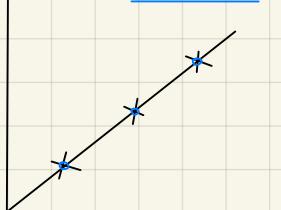
→ indirect

② Negative Correlation

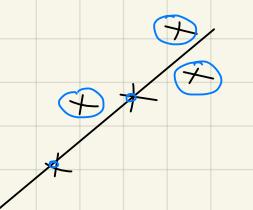
low values of one variable are associated with high values of other variable and high values of one variable are associated with low values of other variable.

Degree's of Correlation

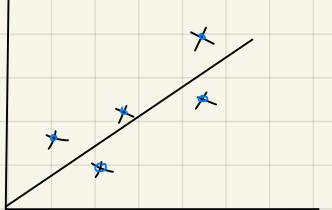
Perfect Correlation



Partial Correlation



No Correlation



How to determine strength of relationship b/w 2 variables through coefficient of Correlation

$$\text{Coefficient of Correlation} = \rho = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

n = no of sets of data

\bar{x} = independent variable

\bar{y} = dependent variable

→ \$

value of coefficient of Correlation must fall in between +1 and -1. you have done mistake.

→ +1, -1 = perfect selection

→ ±0.01 → 0.99 = partial selection

→ 0 = no selection

~~x~~

x	y	x^2	y^2	xy
1 → 4	1	16	4	
2 → 5	4	25	10	
3 → 6	9	36	18	

$$\sum x = 6 \quad \sum y = 15 \quad \sum x^2 = 14 \quad \sum y^2 = 30 \quad \sum xy = 45$$

→ Strength of selection is determined through coefficient of correlation.

$$\rho = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

$$\rho = \frac{6(218) - (18)(66)}{\sqrt{384 - 324} \sqrt{676 - 66^2}}$$

∴

$$1308 - 1188$$

↓

$$\sqrt{(384 - 324)(676 - 66^2)}$$

$$\frac{120}{\sqrt{600 \cdot 240}}$$

$$\frac{120}{\sqrt{14400}}$$

$$\frac{120}{120} = 1$$

Q following data relates to a Company

years	hrs	wages
2005	4000	81000
2006	9000	121000
2007	10000	44500
2008	16000	164000
2009	9000	121000

say

Strength of selection

0.995 → partial

Q1 following data relates to a Company

month	units produced	Cost	x^2	y^2	xy
Jan	2000	9000	4	81	18
Feb	3000	11000	9	121	33
Mar	1000	7000	1	49	7
Apr	4000	13000	16	169	52
May	3000	11000	9	121	33
June	6000	15000	25	225	75

$$\sum x = 18000 \quad \sum y = 66000 \quad \sum x^2 = 64 \quad \sum y^2 = 766 \quad \sum xy = 218$$

say

Strength of relationship b/w units and cost

Coefficient of determination

Measures how much variation in one variable is due to other variable and how much variation in one variable is due to other factors.

It is measured as σ^2 & it is expressed in %.
 \hookrightarrow (Coefficient of relation) 2

Eg:- The coeff of correlation b/w output and cost is 0.9. Assess how much variation in cost is due to output.

Variation is determined through coefficient of determination total cost = $(\text{r} \times \text{unit} \times \text{no of units}) + \text{FC}$

$$\sigma^2 = (0.9)^2$$

$$\sigma^2 = 0.81 + 100$$

$$\sigma^2 = 81.1$$

\hookrightarrow 81.1% variation in cost is due to output

$$100 - 81 = 19.1$$

\hookrightarrow Variation in cost is due to other factors
 \rightarrow discounts
 \rightarrow on consumption

Eg:- The coeff of correlation b/w km and fuel cost is 0.8. assess how much variation in fuel cost is due to other factors

$$\sigma^2 = (0.8)^2$$

$$\sigma^2 = 0.64 \times 100$$

$$\sigma^2 = 64.1 \rightarrow \text{due to km}$$

\hookrightarrow \rightarrow due to other factors

$$100$$

$100 - 64 = 36.1$. Variation is due to other factors.

Regression Analysis

It is a forecasting technique developed as an alternative to high low method.

High low Method

old

$$\text{rcl unit} = \frac{\text{Cost at highest AL} - \text{Cost at lowest AL}}{\text{highest AL} - \text{lowest AL}}$$

$$\text{fixed cost} = (\text{rcl unit} \times \text{units}) - \text{Cost at those units}$$

Regression Analysis

\hookrightarrow new technique

$$\text{equation} = y = a + bx$$

\downarrow

y a b x

total cost units \downarrow fixed cost

$$a = \frac{\sum y}{n} - b \frac{\sum x}{n}$$

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

Q) Following data relates to a Co

month	unit produced	total cost	y^2	xy	x^2
Jan	20000	82000	6724	1640	400
Feb	16000	70000	4900	1120	256
Mar	24000	90000	8100	2160	576
Apr	22000	85000	7225	1870	484
May	18000	73000	5329	1314	324
	$\Sigma x = 100$	$\Sigma y = 400$	$\Sigma y^2 = 32270$	$\Sigma xy = 8164$	$\Sigma x^2 = 2500$

so,

- ① calculate rcl unit & fixed cost under high low method
- ② calculate rcl unit & fixed cost under regression analysis
- ③ calculate total cost if more if 23000 units are made under high low and regression
- ④ Assess strength of relationship b/w unit sold and total cost
- ⑤ Assess how much variation in cost is due to units

1) High low

$$\text{rcl unit} = \frac{\text{highest Cost} - \text{lowest Cost}}{\text{highest unit} - \text{lowest unit}}$$

$$= \frac{90000 - 70000}{24000 - 16000}$$

$$= \frac{20000}{8000}$$

$$\text{rcl unit} = 2.5 \text{ unit}$$

$$\text{fcost} = (\text{rcl unit} \times \text{units}) - \text{Cost at those units}$$

$$= (2.5 \times 24000) - 90000$$

$$\text{fcost} = 30000$$

② Regression Analysis

$$a = \frac{\sum y}{n} - b \frac{\sum x}{n}, \quad b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

$$a = \frac{400}{5} - \frac{2.6 \cdot 100}{5}, \quad b = \frac{5(8104) - (400)(100)}{5(2040) - (100)^2}$$

$$a = \underline{28} \\ \hookrightarrow \text{fixed cost}$$

$$b = \underline{2.6} \\ \hookrightarrow \text{variable cost/unit}$$

③ Total cost if units use 23000

high low method

$$\text{T.C.} = FC + VC(\text{unit} + \text{units})$$

$$\text{T.C.} = 30000 + (2.5 \cdot 23000)$$

$$\boxed{\text{T.C.} = \$87500}$$

Regression

$$y = a + bx \\ = 28000 + 2.6(23000)$$

$$\boxed{y = 87800}$$

Partial

④ Coefficient of Correlation = $\rho = 0.98$

$$\rho = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$

$$= \frac{5(8104) - (400)(100)}{\sqrt{5(2040) - (100)^2} \sqrt{5(32278) - (400)^2}}$$

$$= \frac{40520 - 40000}{\sqrt{10200 - 10000} \sqrt{161390 - 160000}}$$

$$= \frac{520}{\sqrt{200} \sqrt{1390}}$$

$$= \frac{520}{527}$$

$$= 0.98 \rightarrow \text{partial}$$

⑤ Variation due to cost

\hookrightarrow coefficient of determination

$$\sigma^2 = (0.98)^2$$

$$\sigma^2 = 0.9604 > 100$$

$$\sigma^2 = \underline{96.1}$$

\hookrightarrow 96.1% variation in cost is due to units

Date		
Month	Kms travelled	Fuel cost
April	70000	\$110000
May	80000	\$115000
June	77000	\$111000
July	60000	\$97000
Reg.	287	47000
	0.4	933
① Calculate V.C./unit & Fixed cost under high low method	→ 0.84	→ 47820 → Partial
② Calculate V.C./unit & fixed cost under regression	→ 0.9	→ 50.4
③ Using Regression find fuel cost in avg if 62000kms are travelled		
④ Assess strength of relation b/w kms & fuel cost		→ Partial
⑤ Assess how much variation in fuel cost is due to external factors		↳ 91.1% actual
Sol:		↪ highest A.L - Cost at lowest A.L
		↪ actual

Time Series analysis

The value of variable recorded over a period of time is called time series - i.e past data

- 3 trends
- 2 models
- types of variation
- components of T+S

Fig	years	Sales
	2001	\$5000
	2002	\$6000
	2003	\$7000

→ time series
Sales evaluation
↓
→ accurate forecasting
→ accurate decisions

there are 3 trends in time series :-

- ① Rising trend
 - ② Falling trend
 - ③ Mixed trend
- value of variable is rising → value of variable is falling → value of variable is mixed

Type of Variations

→ Long term variation T

underlying long term movement in value of variable - long term movements -

→ Seasonal Variation S

movements due to particular seasons

→ Cyclical Variation C

effects of economic cycle - Chores or succession

→ Random variations R

movement due to one off's events i.e flood, earthquake -

Additive model
↓

Relation b/w Components of T+S is of addition.

Multiplicative Model

Relation b/w Components of T+S is of multiplication.

$$y = T + S + C + R$$

Time Series Analysis

it's a forecasting technique

Additive model

Multiplicative model

Relation b/w Components of T+S is of addition.

$$Y = T + S$$

y = Sales → total element → long term constant

T = moving averages → 3 moving avg

Relation b/w Components of T+S is of multiplication

$$Y = T \times S$$

S = Seasonal Variation

Q) following data is available

2003 Sales → \bar{Y}

Q1 5000

Q2 8000

Q3 6000

Q4 5500

2003 Sales

Q1 5800

Q2 6600

Q3 6300

Q4 5400

- ① Compute trend figures through 3 point moving average -

- ② Find Seasonal Variation through additive and multiplicative model.

Quotients

T = 3 point moving avg

$$\bar{T}$$

Q1

-

-

-

Q2

$$6333$$

$$+1667$$

$$1.26$$

Q3

$$6500$$

$$-500$$

$$0.92$$

Q4

$$5766$$

$$-266$$

$$0.95$$

Q1

$$6966$$

$$-1166$$

$$0.83$$

Q2

$$7233$$

$$+2367$$

$$1.32$$

Q3

$$7100$$

$$-800$$

$$0.88$$

Q4

-

-

-

Second Variation

$$T = T + S$$

$$S = T - \bar{T}$$

Second Variation

$$T = T + S$$

$$S = \bar{T} - T$$

Q) following data is available

2003 Sales

Jan 4000

Feb 6000

Mar 7000

Apr 5000

May 5500

June 6800

July 8200

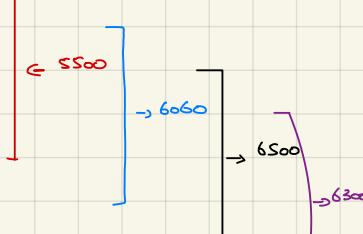
Aug 6000

Sep 5800

Oct 9000

Nov 9500

Dec 7000



Q) Compute trend

- Compute trend through 5 point mov avg
- Find Seasonal Variation through both models

Year	$T = S \text{ point moving}$	$S = T - T$	$S = T/T$	Quarters	Trend \rightarrow 4-point moving	Cont. avg	$\text{Arg } \frac{T}{T}$	$S = T - T$	$S = T/T$
2008									
Jan	-	-	-	Q1	-	-			
Feb	-	-	-	Q2	<u>6125</u>	-			
Mar	5500	+1500	1.27	Q3	<u>6325</u>	6225	-225	0.96	
Apr	6600	-1060	0.82	Q4	<u>6725</u>	6525	-1025	0.84	
May	6500	-1000	0.84	Q1	<u>6800</u>	6763	-963	0.85	
June	6300	+500	1.07	Q2	<u>6775</u>	6787	-287	1.41	
July	6460	+1740	1.24	Q3	-	-			
Aug	7160	-1160	0.83	Q4	-	-			
Sep	7700	-1900	0.75						
Oct	7460	+1540	1.2						
Nov	-	-	-						
Dec	-	-	-						

Q) following data is available

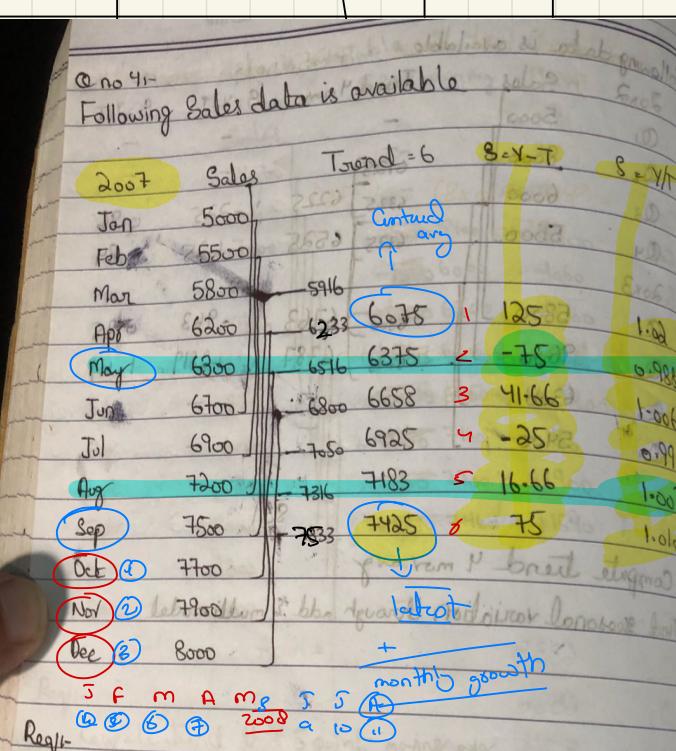
2002	Sales	T
Q1	5000	
Q2	8000	
$\rightarrow Q3$	6000	<u>6125</u>
Q4	5500	<u>6325</u>

2003	Sales	T
Q1	5800	
Q2	9600	
Q3	8300	<u>6725</u>
Q4	8400	<u>6800</u>

say

\rightarrow Compute trend 4-point moving

\rightarrow Seasonal variation through both model



iii) $\text{last trend} - \text{first trend} \rightarrow \text{monthly growth in trend}$

$n-1$

$= 7425 - 6075$

$6-1$

$= 270 \text{ /month}$

\nearrow Actual + Trend \searrow last trend

$\text{C} + \text{R} \rightarrow \text{details}$

$\text{C} = \overline{T} + S$

$= (7425 + (270 \times 8)) + (-75)$

$\rightarrow \text{Sales projection}$

$= 9510 \rightarrow \text{Sales for May 2008}$

⑤ $T = T + S$

$= 7425 + (270 \times 11) \times 1.02$

$y = 10415$

$\hookrightarrow \text{Sales of August 2008}$

MF PM

Q1. The equation of time series is $y = 2000 + 3x$
 y is revenue & x is month number. Seasonal variation
 found to be +60. Find revenue for month 24.

→ additive model

Soln-

$$\begin{aligned}y &= 2000 + 3x \\y &= 2000 + 3(24) + 60 \\y &= 2000 + 3(24) \\y &= 2072 + 60 \\y &= 2132\end{aligned}$$

→ Solved
method

Q2. Equation of time series is $z = 600 - 2t$ where z is unit sold & t is quarter number. Multiplication method
 i.e. $1 \cdot 3$. Find units sold for 3rd quarter.

Soln-

$$\begin{aligned}z &= 600 - 2t \\&= 600 - 2(3) \\&= 594 \times 1.3 \\z &= 772.2\end{aligned}$$



Q3. Equation for time series is $y = 400 + 4m$ where y is revenue & m is month number starting with $m=1$ as first month of 2006. Find revenue for feb 2007 if seasonal variation is -2%.

Soln-

↓
additive

$$y = 400 + 4m$$

$$y = 400 + 4(14)$$

$$y = 456 - 21$$

$$y = 435$$

Feb feb
2006 2007

Page No.

Date

Q4. Equation for time series is $P = 400 + 2s$ where P is revenue & s is week number. Seasonal variation is -20. Find revenue for week 52.

$$\begin{aligned}P &= 400 + 2s \\P &= 400 + 2(52) \\P &= 504 - 20 \\P &= 84\end{aligned}$$

basic syllabus

→ Pondai Co → Study hub

→ wetmay clothes Co → study hub

] → PM

Q5. Equation for time series is $y = 3000 - bp$ where y is revenue & p is revenue & p is quarter number. Starting with $p=1$ as first quarter of 2007. Seasonal variation on this is multiplicative is 0.9. Find revenue for Q3 of 2008.

Soln-

$$\begin{aligned}y &= 3000 - bp \\&= 3000 - b(7) \\&= 2958 \times 0.9 \\&= 2667.2\end{aligned}$$

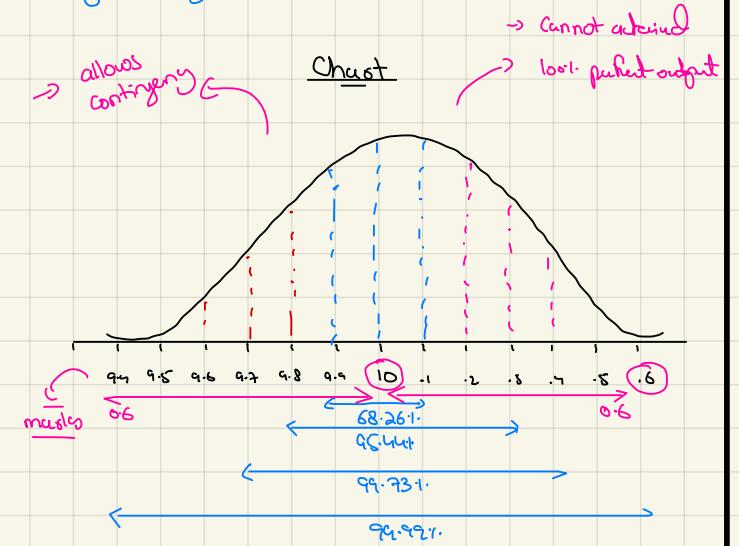
Six Sigma Methodology

+91 9881262389



- quality improvement approach
- the fact is this technique believes that perfect output cannot be achieved (minos contingencies)
 - ↳ Contradicts with TQM ↳ no Contingency of errors

→ According to Six Sigma, defects will arise but should not be more than tolerance level determined by Six Sigma



→ this technique has allowed contingency but hasn't allowed errors → $\underline{9} \times \underline{8} \times$

how this technique is applied to continue
↳ team dedicated for this
→ it works across every function

Six Sigma processes are applied by Six Sigma team which consists of yellow belts, green belts, black belts and master black belts.

→ that belts denotes certifications of Six Sigma
that one has to take.

- green belt → 70000 a years
- Black belt → 100000
- master black belt → more than 100000 years

→ mainly, CPO's, CFO's, GM → leadership
↳ Six Sigma black belt

Steps of Six Sigma

follows a 5 step approach

DMAIC

Define
measure
analyse
improvements
Control

Problem in an entity

- Define
- Define the problem
- requirements to address this problem
- exceed like exceeding customer expectations

→ Measure → Consequences

① Collection of data to identify the factors that what is causing the quality problems

② measure

inputs
process elements
outputs

→ once they are aware of logistic cycle they can measure right input.

Analyse

The collected data is then analysed to identify root causes of the problem.

Analysis

- Analysis is divided into three steps
- by adding value
- Supporting activities for value adding activities
- non value adding activities

Improvement

if the problem is real, the Six Sigma team identifies possible outcome to improve the process based on data analytics the main purpose

Control

Control planning, including data collection and control mechanisms is required on continuous basis.

- ② it is important to create trust and clarity from the target client or customers.

→ Customer Centric approach

Advantages

→ Six Sigma is driven by the customer and thus aims to achieve maximum customer satisfaction and minimising defects.

→ it targets the customer delight and works / suggest best things that customer can do through new innovative ideas.

→ through innovative ideas, implementation of Six Sigma could lead to higher profit and lower costs. Six Sigma can earn profits if applied effectively.

Disadvantages

- acceptability level can be subjective, some might accept, some might reject

→ Six Sigma implementation requires skill, main force, the controls and dedication towards Six Sigma are hard to enough.

→ It contradicts with innovation, it has given you a error contingency, you have stick around it.

3.4 Six Sigma

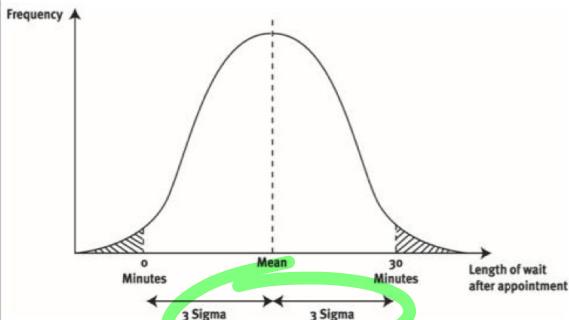
- Six Sigma is a quality management programme that was pioneered by **Motorola** in the **1980s**.
- The aim of the approach is to achieve a reduction in the number of faults that go beyond an accepted tolerance level. It tends to be used for individual processes.
- The sigma stands for the standard deviation. For reasons that need not be explained here, it can be demonstrated that, if the error rate lies beyond the sixth sigma of probability there will be **fewer than 3.4 defects in every one million units produced**.
- This is the tolerance level set. It is almost perfection since customers will have room to complain fewer than four times in a million.



Illustration 7 – The Six Sigma approach

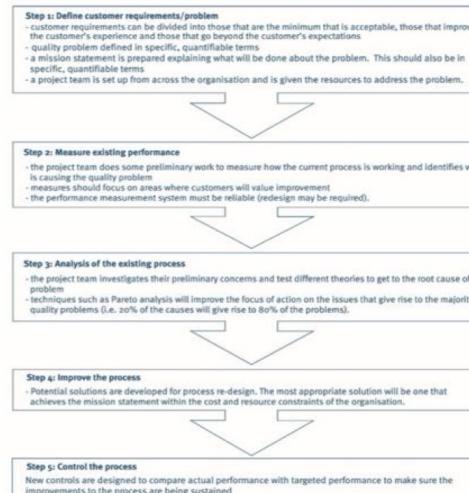
A hospital is using the Six Sigma process to improve patient waiting times. An investigation of the views of patients has revealed the following:

- Patients do not want to be called before their appointment time as they do not want to feel that they have to be at the hospital early to avoid missing an appointment
- The maximum length of time they are prepared to wait after the appointment time is 30 minutes.



The aim of the Six Sigma programme will be to ensure that no more than 3.4 waits in every million occurrences exceed 30 minutes or are less than 0 minutes.

The five steps of the Six Sigma process (DMAIC)



How does Six Sigma improve the quality of performance?

Six Sigma improves quality in a number of ways:

- It sets tight targets but accepts some failure (100% perfection may be viewed as impossible to achieve).
- The identification of business process improvements as key to success.
- Management decision making is driven by data and facts, for example the number of customer complaints as a key performance measure.
- The proactive involvement of management and effective leadership to co-ordinate the different Six Sigma projects.
- It involves collaboration across functional and divisional boundaries focusing the whole organisation on quality issues. Training and education about the process will be critical to its success.
- The increased profile of quality issues and the increased knowledge of quality management that comes from the use of different layers of trained experts.

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Test your understanding 6

Required:

Explain some of the **possible limitations of the Six Sigma process**.

Additional question on quality

Required:

Explain how management accounting/management techniques such as total quality management, just in time, value analysis, activity based costing and the balanced scorecard could contribute towards the analysis of the relationship between costs and quality.

Answer:

Total Quality Management (TQM)

TQM is an approach that seeks to ensure that all aspects of providing goods and services are delivered at the highest possible standard, and that standards keep improving. The underlying principle is that the cost of preventing deficient quality is less than the costs of correcting poor quality.

Quality related costs are concerned with both achieving quality and failure to achieve quality. Quality costs can categorised as:

- **Prevention costs** – communicating the concept, training, establishing systems to deliver quality services
- **Appraisal costs** – e.g. inspection and testing
- **Internal failure costs** – wasted materials used in rejects, down time resulting from internal service quality failures, resources devoted to dealing with complaints
- **External failure costs** – loss of goodwill and future business, compensation paid to customers and rectification costs.

The TQM view is that by getting it right first time and every time, the prevention and appraisal costs will be outweighed by the savings in failure costs, hence lower costs and improved quality are congruent goals. TQM requires everyone in the organisation to have identified customers, whether external or internal, so that a continuous service quality chain is maintained all the way through the organisation to the final customer.

Just In Time (JIT)

JIT is a manufacturing and supply chain process that is intended to reduce inventory levels and improve customer service by ensuring that customers receive their orders at the right time and in the right quantity. The system should facilitate a smooth workflow throughout the business and reduce waste. Goods are produced to meet customer needs directly, not for inventory.

Cost reductions should arise from:

- Lower raw material and finished goods inventory levels, therefore reduced holding costs.
- Reduced material handling.
- Often a reduction in the number of suppliers and lower administration and communication costs.
- Guaranteed quality of supplies reduces inspection and rectification costs.

Quality improvements should arise from:

- Fewer or even single sourcing of supplies strengthens the buyer-supplier relationship and is likely to improve the quality.
- The absence of customer stockholding compels the supplier to guarantee the quality of the material that they deliver.
- The necessity to work regularly and closer with hauliers strengthens the relationship with them. The deliveries become high priority and more reliable.
- Customers are not faced with the traditional problems of having to wait until their supplier's inventories are replenished. The system is designed to respond to customers' needs rapidly.
- Direct focus on meeting an identified customer's need.

Value analysis

Value analysis is concerned with concentrating on activities that add value to the product/service as perceived by the customer. It examines business activities and questions why they are being undertaken and what contribution do they make to customer satisfaction. Value added activities include designing products, producing output and developing customer relationships. Non-value added activities include returning goods, inventory holding, and checking on the quality of supplies received. Wherever possible eliminate the non-value added activities.

Value analysis commences with a focus on customers. What do they regard as significant in the buying decision: function, appearance, longevity or disposal value? This is concerned with identifying what customers regard as quality and then providing it: do not expend effort on what they regard as unimportant.

It is about clarifying what the constituents of quality are on the Costs and Quality diagram. Having decided this there is no need to develop alternative designs, estimate costs and evaluate alternatives.

Activity Based Costing (ABC)

ABC is concerned with attributing/assigning costs to cost units on the basis of the service received from indirect activities e.g. public relations, recruitment, quality assurance general meetings. The organisation needs to identify cost drivers – the specific activities that cause costs to arise e.g. number of orders taken, telephone calls made, number of breakdowns or the number of visitors to an attraction.

ABC intends to avoid the arbitrary allocation of overheads to products/services by identifying a causal link between costs, activities and outputs. Because of higher degrees of automation, the increasing significance of overheads in the cost make up of output intensifies the need to improve the apportionment of them. Accountants can contribute towards providing better cost information to the value analysis referred to above. Product managers need to know what is the real cost of quality? Which are the cost driving activities that do not impact on quality? What activities that generate minimal costs have a significantly favourable impact on quality?

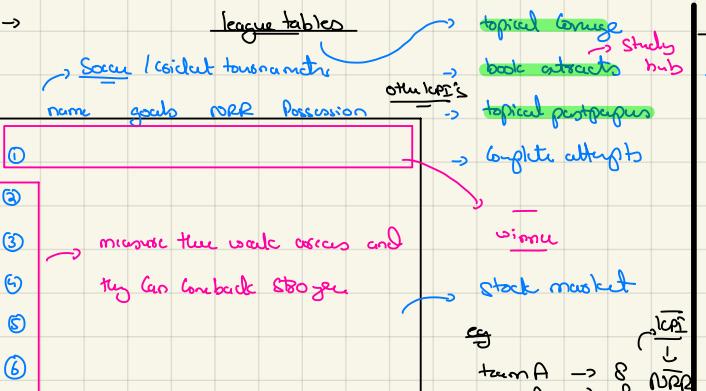
The balanced scorecard

The balanced scorecard provides a framework for a business to achieve its strategic objectives include both financial and non-financial objectives. The approach claims that performance has four dimensions: financial, customer, internal business, and innovation and learning. The customer perspective asks: How does the business appear to the customers? The internal business perspective asks: What do we need to do to satisfy shareholders and customers, including the monitoring of unit costs? The innovation and learning perspective looks at how products and processes should be changed and improved.

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The role of quality in performance measurement

The scorecard is concerned with monitoring and measuring the critical variables that comprise the customer and internal perspective. The choice of variables for inclusion in the scorecard is significant because the scorecard is a tool for action, for improving processes. Indicators will trigger damaging responses. For example, the organisation needs to monitor what factors customers regard as contributing to improved quality, not what the business thinks it should provide. Therefore the scorecards would be suitable for inclusion as quantifiable indicators on the axis on the Costs and Quality diagram. The balanced scorecard attempts to improve the range and relationship between alternative performance measures in the case under discussion, costs and quality.



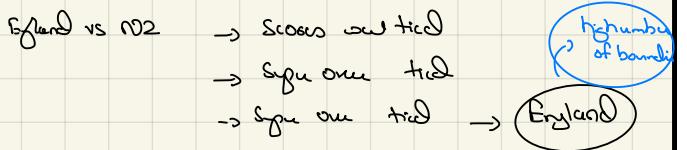
Definition

A league table stands, ranking charts is a chart or list which compares sport teams, institutions, nations, organisations by ranking them in order of ability or achievement based on certain factors.

→ primary factors

A league table may list several selected statistics, but they are generally sorted by the primary one that determines ranking.

2019 GCSE

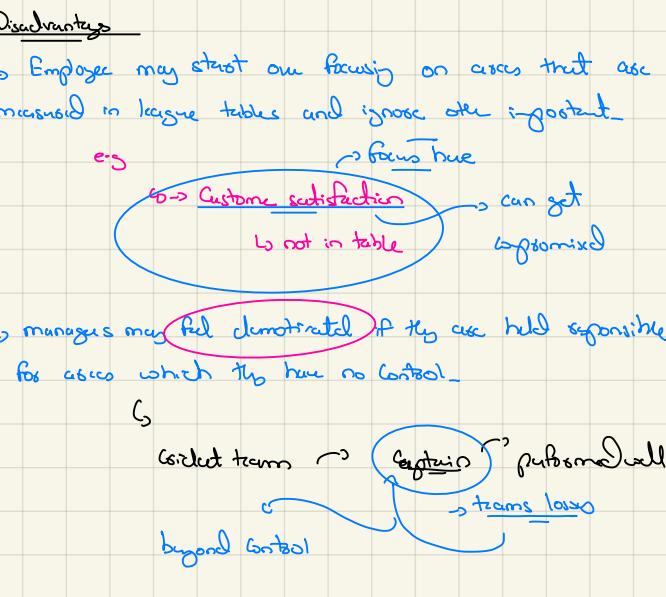


→ Many industries and institutions may compete in league table in order to help bring in new customers and clients. These are becoming popular in public service as a performance management tool.

Advantages ↳ one line → score → linked with scenario

→ Encourages competition among different divisions.
→ helps indicate areas of best practice to improve performance
→ Gives you a single figure which gives a clear immediate answer to question of performance

↳ immediately highlights areas of weakness.



Performance management in not-for-profit organisations

5 The use of benchmarking (league tables) and targets in public sector performance

5.1 Introduction

Benchmarking (as discussed in Chapter 1) is undertaken by many public sector organisations.

The results from a benchmarking exercise can be used to rank organisations in a league table, with the various metrics from the exercise being presented and then summarised into an overall weighted average score.

Q A league table is a chart or list that compares one organisation with another by ranking them in order of ability or achievement.

League tables have become a popular performance management tool in the public sector in recent years, for example in hospitals and schools.

Illustration 7 – The use of league tables in schools

Last year, the schools' league tables in the UK showed that London is the highest performing region in England at GCSE level (exams sat by students at the age of 16) with over 70% of pupils achieving the benchmark at GCSE of five 'good' passes including English and mathematics. This is a striking turnaround in the last 25 years or so. In 1997 only 29.9% of London pupils reached this level.

5.2 Advantages of benchmarking (league tables)

- Implementation stimulates competition and the adoption of best practice. As a result, the quality of the service should improve, resulting in both operational and strategic benefits.
- Monitors and ensures accountability of the providers. This accountability should serve as a source of motivation for the provider.
- Relative performance is easily compared and performance is transparent. This should motivate the provider and is beneficial for the user.
- League tables tend to be readily available and so can be used by consumers to make choices.
- Many different areas of performance can be summarised into one weighted average score, resulting in ease of use and acts as a focus for operational and strategic improvements.

↳ Providers

↳ WAS ↳ NFER

? Certain factors
Vitals → Patient stds, financial
may affect

- ### 5.3 Problems of using benchmarking (league tables)
- Dysfunctional behaviour – if targets are not aligned to the organisation's mission then managers may focus on achieving targets to the detriment of overall performance. ↳ not an absolute one
 - League tables only measure relative performance. The best/worst performing organisation may still be performing unacceptably/acceptably in absolute terms. ↳ 2 footballs → different sizes
 - Differences between the organisations in the league table (for example, in location) are not accounted for. This may result in employees being held responsible for things over which they have no control.
 - Ranking – what areas and weightings should be used in the scoring system to arrive at the ranking?
 - The quality of the information will be dependent on the quality of data used to arrive at the weighted score. The data management systems in the public sector do not always provide quality data.
 - Poor results may have a negative impact on public trust and employee morale and may lead to users switching to alternative providers resulting in a downward spiral in the quality of the service provided.
 - Encourages providers to focus on performance measures (it becomes a measuring exercise) rather than the quality of the service (it does not become a learning exercise in improving operational and/or strategic performance). Many of the outcomes valued by society are not measurable but many of the performance indicators have been selected on the basis of what is practical rather than what is meaningful.
 - Benchmarking will not lead to improvements if pressure is not exerted by stakeholders.
 - The exercise is costly and time consuming and may not be considered a good use of limited public sector resource.
 - Could encourage creative reporting.

Test your understanding 4

A government has decided to improve school performance by the use of league tables with schools assessed on the following:

- Percentage pass rates in examinations
- Absenteeism

It has been proposed that funding be linked to these measures.

Required:

Suggest some potentially negative outcomes of this system.

→ ranked by score → Moody's, BCW, etc
↳ Criteria

Public Service continuity

4 You are a performance management expert brought in by the **Chief Executive Officer (CEO)** of the Department of the **Interior for the country of Essland**. The department is a branch of the Essland government which handles **police, immigration and border control**. The CEO is a civil servant and he reports to the Minister for the Interior. The Minister for the Interior is an elected politician selected by the Prime Minister of Essland, who leads its government.

The newly-elected Minister for the Interior has instructed the CEO to implement his policy for improving the regional police forces' performance by copying the method used for schools. In a recent initiative by the School's Ministry, a league table for the **hundreds of schools in Essland was created**, showing the **best and worst in terms of examination performance only** in order to motivate senior school managers to improve. The league table was used to create targets for assessing the schools' and their managers' performance. Additionally, parents in Essland have the right to choose which **school** their children attend and so often base their selection on league table performance. Therefore, the Minister has had a policy review body draw up a method of creating a league table for the police forces.

The CEO has requested your help to clarify his own thinking on this new policy for the **four regional police forces** in Essland (**C**) Cheshire (**D**) Derbyshire (**E**) and **F** Fifeshire (**F**). The CEO needs you to assess the use of the league table using the policy review body's suggested method and has collected the data and calculation of the league table given in **Appendix 1** to assist you. He also wants to assess whether the table will help in meeting the Department's aim and goals for the police. The overall aim of the Department (and its police forces) is 'to provide a value-for-money service to ensure that the community can live in safety with confidence in their physical and legal security'. The detailed goals of the Department are:

- Tackle the underlying causes of crime and achieve long-term sustainable solutions → **Rank 1**
- Bring perpetrators to justice → **Rank 2**
- Provide protection and support for individuals and communities at risk of harm → **Rank 3**
- Respond to community needs by being accessible and engaging with their concerns → **Rank 4**

The CEO warned you, I'm not interested in the performance of the forces. I'm interested in the method of assessment, so don't waste time with your ideas on how to improve actual policing.'

The CEO also wishes to understand the **strengths and weaknesses of the use of a league table**, its link to targets and the likely reaction of employees to this system of performance management, especially as there is a **strong union representing the police**. He is worried about the employees' attitude to the introduction of the system and its effects on their behaviour and their sense of accountability. He is also concerned about importing the use of a league table from the schools sector, as it might not be appropriate here.

Required:	2 - 3.7	Evaluate method of league table
(a) Evaluate the method of calculating and measuring the Force Scores for use in the league table in achieving the Department of the Interior's aims and goals.	$\Sigma = 2 + 3 + 1 = 6$	(14 marks) 2.3 (10 points)
(b) Discuss the merits of league tables in performance management and address the CEO's concerns over their use in managing the performance of Essland's police forces.	$\Sigma = 2 + 3 + 1 = 6$	(11 marks) 2.3 (8 points)

Appendix 1

The appendix defines the policy review body's method for scoring each force, provides the basic data for each force and then calculates the current force score placing the forces into a league table:

$$\text{Force score} = \text{Rank 1} \times 0.25 + \text{Rank 2} \times 0.25 + \text{Rank 3} \times 0.25 + \text{Rank 4} \times 0.25$$

where each Rank is the ranking from 4 to 1 which each force gets for each of the following variables (4 is best, 1 is worst):

- Rank 1 is based on the number of crimes per 10,000 of population
- Rank 2 is based on the solution rate for crimes reported in the year
- Rank 3 is based on the user satisfaction score (based on a survey of the population)
- Rank 4 is based on the percentage of calls to police answered within 10 seconds

For example, a force which was top ranked in each of the Ranks would get a Force Score of 4 (= $4 \times 0.25 + 4 \times 0.25 + 4 \times 0.25 + 4 \times 0.25$).

Data by region:

For the calendar year 2012

	C	D	E	F
Population	1,250,000	900,000	1,700,000	1,500,000
Number of crimes reported in year	62,500	47,250	83,300	63,000
Number of crimes solved in year	31,250	22,680	45,815	33,390
User satisfaction score	71%	80%	73%	68%
Percentage of calls to police answered within 10 seconds	92%	93%	91%	94%
Number of police force employees	6,200	4,400	8,500	7,900
Cost of police force for year (\$m)	404	298	572	510

	C	D	E	F
Number of reported crimes per 10,000 of population	500	525	490	420
Rank 1	2	1	3	4
Solution rate for crimes reported in year	50%	48%	55%	53%
Rank 2	2	1	4	3
Rank 3 (user satisfaction)	2	4	3	1
Rank 4 (call handling)	2	3	1	4
Force score	2.25	2.75	3.00	2.00

	C	D	E	F
The league table for 2012 is:	④	③	②	①
Force	Score			
1. F	3.00			
2. E	2.75			
3. D	2.25			
4. C	2.00			

Note: You should assume that the calculations in Appendix 1 are accurate.

Date

Answer

Force scores should reflect aims and objectives of department

The overall aims has two basic parts ① value for money

② community safety

The observation of force score suggest that community safety is been achieved by force scores but value for money doesn't seems to be targeted. Value for money is dictating that services are **economic, efficient and effective**.

A KPI calculating cost per population member which could give a valuable measure in VFM approach is determining below

	C	D	E	F
number of PP per	44.6	48.9	50	52.7
local population	2200	4400	8800	2400
cost per population member	<u>1250000</u> 10000	<u>4800000</u> 10000	<u>7700000</u> 10000	<u>1500000</u> 10000

more detailed goals of police force

- **Curse of crime and suggests longer solutions Rank 1**
- **Bring offenders of justice Rank 2**
- **Promote safety to communities at home Rank 3**
- **Community needs Rank 4**

none of these services ill be perfectly measure of each of the goals but this is a broad range from the issue putting to community needs can be solved if there are community engagements which will help in obtaining community problems

The choice of force score formulae which is an weighted average score needs to be calculated and same other factors that denote particularly VFM shall be added as well.

while calculating the force scores, cost of police can be incorporated, because if particular division is poorly good than at a lower public cost must get a force score. C has a lower cost but still fulfilling several functions that have been assigned.

The formula of force score seems to be single purpose don't aim cognitive the priorities to get cross factors in calculation.

b. The use of league tables **efficacious benchmarks** performance and can positive impact on behaviour. The sharing of data on performance can indicate areas of best practice and hence can reward improvements.

However, league tables only **measures selective performance**. The best force in the table could still be producing an unacceptable performance in one factor so this can make factors that can be used in league score

on introducing league table, if police staff didn't understand the criteria, they might feel they will be not accountable for it because of lack understanding

once anyone is been trained on league table and have an idea of its working, they might want an own focused approach and forget this outcome by our focus on this approach of league table.

it could result in demotivation of police staff if they think that this valuable work is not been accounted for in this score and hence this demotivate work impact this performance

no → submit it too chunk

Posie is a large business which manufactures furniture. It is made up of two autonomous divisions in Deeland. The manufacturing division purchases raw materials from external suppliers, and performs all manufacturing and packaging operations. All sales are made through the retail division which has 95 retail stores in Deeland, as well as through Posie's own well-developed website. Posie has retail operations in eight other countries as well as in Deeland. These overseas businesses operate as independent subsidiaries within the Retail Division, each with their own IT and accounting functions.

The furniture is sold in boxes for customers to assemble themselves. About 10% of the products sold by Posie are purchased already packaged from other manufacturers. All deliveries are outsourced through a third party distribution company.

Posie's corporate objective is to maximise shareholder wealth by producing 'attractive, functional furniture at low prices'. This is how customers generally perceive the Posie brand. The CEO of Posie is concerned about increasing levels of returns made by customers and increasing numbers of consumers complaining on online forums about products purchased from Posie.

Concerned about the impact on the Posie brand and the cost-leadership strategy, the CEO has asked you as a performance management expert to help Posie implement the six sigma technique to reduce the number of products returned and in particular to define customers' requirements and measure Posie's existing performance. The production director has been appointed to sponsor the project and you will be supported by a small team of managers who have recently received training in six sigma. The board member responsible for manufacturing quality recently resigned because she thought it was unfair that the manufacturing division was being held responsible for the increased level of customer returns.

You have been given access to some information concerning the reasons why customers return goods to help you measure existing performance in this area (Appendix 1). This is an extract from the management reporting pack presented to the board at their monthly meetings. The returns data, however, are only compiled every six months due to the lengthy analysis required of data from Posie's overseas retail operations. It is included twice a year in the board report along with the KPIs for customer satisfaction. The last time this information was produced 93% of customers indicated they were satisfied with the quality of the manufacture of Posie's products.

The CEO has heard that six sigma requires 'large amounts of facts and data'. He suggested that the returns data contain insufficient detail and that as part of your project you may need to do more analysis, for example, on why customers are not satisfied with the manufacturing quality.

He also added, 'I'm not sure that our current IT systems are capable of generating the data we need to identify which responsibility centres within the manufacturing division are the root causes of the problem of customer returns. We are planning to change the designation of the overseas retail businesses from profit centres to revenue centres, but again we need to know first how this will affect the information requirements of the business and any potential problems with doing so.'

Appendix 1

Reasons given by customers for returning goods

Category	Reason for return of goods	% Responses
1	Difficult to assemble or pieces missing	48%
2	Goods arrived damaged	14%
3	Goods were not as described or were defective	25%
4	Goods were of poor quality or no longer wanted	11%
5	Arrived late	2%
Total		100%

Required:

- (a) Advise the board how the six sigma project at Posie to reduce returns from customers could be implemented using DMAIC methodology. (15 marks)
- (b) Evaluate the impact on Posie's information requirements arising from:
- (i) The need to identify and improve on the level of customer returns. (6 marks)
 - (ii) The proposed re-designation of the overseas subsidiaries from profit centres to revenue centres. (4 marks)
- (25 marks)

Continue from previous page → League table

This table is being used at school, getting them ingrained at primary focus may not be valid because league table of schools help parents focus on school but league table of focus would create unnecessary competition between them.

→ students might think that focus with lower scores can be of no use.

topic

Value based management

→ VBM

approach

technique → shareholders wealth creation

SOC

→ each & every division

→ topical discussions

→ Book extracts

→ Best practice

→ how → assignment

→ Conflict paper

3 terms that are important in this chapter

Economic Value added

E → A

→ how much value is been added

EVA is positive → good

EVA is negative → bad

Part trend of EVA also matters

ys1 = 10 EVA ys2 = 4EVA

Market Value added

M → A

how much value have been

Gained till date

Sum of all years EVA

1 2 3 4 5

12 3 7 6 2 = 30

Shareholder Analysis

Value of Complete business
it matters for most of the shareholders

If in case you need to be "outstanding" → you need to think beyond your targets - Value based Management

"whatever you did, how it added value"

8 Value-based management

This is a slight aside but it is worth covering here since it follows on from our discussion of ROI, RI and EVA.

8.1 Introduction

Being able to apply and evaluate alternative views of performance measurement and management is an important capability for APM. Value-based management (VBM) is one such approach to performance management (other examples include the balanced scorecard (Chapter 11) and activity-based management (Chapter 3)).

As mentioned in the previous chapter, businesses (and the divisions within them) are under increasing pressure to look at the long-term value of the organisation since this is what investors will be interested in.

Traditionally, profit-based measures, such as ROCE/ROI, EPS or net profit margin, were used to measure performance. The source of this information was the company's annual financial statements and therefore the measures were short-term and backward looking.

More recently it has been recognised that there is a limited link between 'maximising profits' and the company's overall goal of 'maximising shareholder wealth'. For example, in Section 5.2 we said that one of the disadvantages of using ROI (divisional equivalent of ROCE) to measure performance is dysfunctional decision making.

8.2 What is VBM?

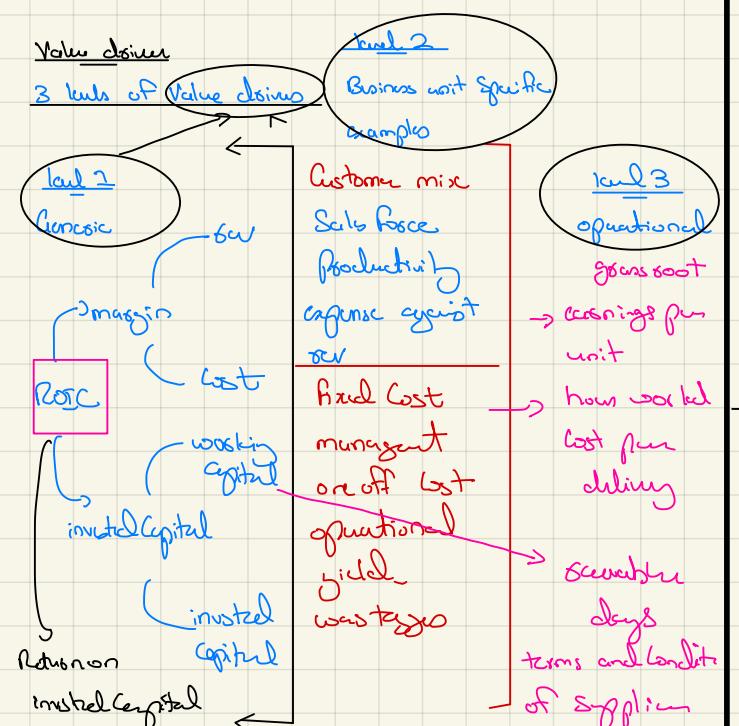
VBM is an approach to management whereby the company's strategy, objectives, culture and processes are aligned to help the company focus on the key drivers of shareholder wealth and hence the maximisation of this value.

VBM is an approach which takes the interests of the shareholders as its primary focus.

It begins from the view that the value of a company (and hence shareholder wealth) is measured by its discounted cash flows. The idea being that value is only created when companies generate returns which beat their cost of capital.

To measure performance under VBM a single, overall organisational metric is established, such as EVA. Then value drivers are identified. These are activities linked to long-term shareholder value that:

- managers can influence and control
- cascade throughout all levels of the organisation and across all divisions
- link to the objectives for managers and staff
- cover both financial and non-financial areas of performance.



Practical examples

has you added value

→ objective core been set

on employee needs to fill out

what objective for next year

↓

Corrected by line manager

Critical

Ranking → bonus

outstanding 7.5

on target 5

more expected 2.5

→ evaluation

achieved → on target

Q Bazelle

In the context of VBM, value of a business is measured by discounting cash flows at the **business's cost of capital**. When investment returns exceed the **cost of capital**, **value will be created for shareholders**. When returns are lower than the **cost of capital**, **value will be destroyed**.

The VBM approach is to ensure that all activities and decisions in a business are undertaken so as to create value for shareholders. Currently, Bazelle's overall objective is to maintain ROCE at historic levels, but this does not necessarily create value for shareholders.

This is particularly so now that Bazelle has diversified into hiring **large items of plant** for use in **major infrastructure projects**. These **projects last up to 10 years**, so the time value of **money is likely to be significant**, as is the **initial capital expenditure for the plant**. Long-term hire agreements may give an acceptable ROCE, but may have a negative net present value, and hence **destroy value for shareholders**. The prediction of large increases in bank interest rates will increase Bazelle's **cost of capital**, and further reduce the net present value of long-term agreements.

Similarly, business unit and branch managers are given the objective of **maintaining net profit margins**. Thus, managers may avoid activities which reduce profits in the short term, but which have future long-term benefits and **create value for shareholders**, such as investment in staff training.

With VBM, decisions are taken to create value for shareholders by considering value drivers, which are any factors which affect the value of the business. Value drivers may be non-financial, such as the **customer satisfaction** which may have been improved by the postponed staff training. A **VBM approach** is, therefore, suitable for Bazelle as it will encourage creation of **value for shareholders**.

↳ Conclusion

a

VBM → discounted CF's → inc in wealth of SH. ↗ good
→ if actions are lause → value is destroyed ↘ start

VBM says Create Value → Bazelle focuses on getting ROCE higher → it doesn't necessarily create Value...

Bazelle aim → higher ROCE → invest in 10 year projects →
NPV of NPV can be negative → Value is destroyed
→ int crit, Cost of Capital ↑, NPV lower
value destroying.

→ delayed staff training → saves cost for short term,
in long term it could have yielded more value as
customers would have been satisfied

→ not necessarily, value drivers are financial → non financial
too,

→ Conclusion → good for Bazelle to have VBM.

- (b) To adopt a **VBM** approach, Bazelle would need to use a **different set of performance indicators**, as ROCE and net profit margin do not necessarily **create value for shareholders**. Economic value added (EVA™) is a performance measure for shareholder value. Though more complex to calculate and more difficult to understand than the existing measures, EVA™ does encourage managers to make decisions, such as undertaking staff training, which have future long-term benefits. By encouraging managers to make investments which give a positive EVA™, value will be created for shareholders.

With VBM, managers would be given targets according to their areas of responsibility. For example, the **board may have objectives to maximise value by making acquisitions which create value**. Branch managers' objectives may be focused on non-financial value drivers such as customer satisfaction.

To identify **value drivers**, Bazelle will **need good information which is accurate, reliable and timely**, for example. It is unclear whether the current management information system is able to provide good information, **but the CEO has said that information on customer satisfaction is not available**. Resources, such as financial investment, time and training, may be needed to improve Bazelle's management information. Managers may resist the change in culture which would be required to adopt VBM; not least the CEO would need to set the 'tone at top' for what would be a disruptive and major change to Bazelle. However, the benefits of adopting VBM seem to outweigh the costs of doing so.

(c) As the economic value added (EVA™) is \$(13.1m), Bazelle has destroyed value for shareholders .	
Calculation of net operating profit after tax (NOPAT)	
Net profit after tax	\$m 10.0
+ Add: depreciation on non-current assets	6.0 (14.0)
- Deduct: economic depreciation	
Add: interest (accounted for in the WACC)	15.0 (3.0)
Less: tax on interest (\$15.0m x 20%)	
Deduct: reduction in bad debt provision	12.0 (4.8)
Add: advertising for long-term benefit	0.6
NOPAT	9.8
Calculation of economic value of assets	
Capital employed at the start of the year	\$m 250.0
Add back: difference in accumulated depreciation	(16.0)
Add back: increase in bad debt provision	4.8
Economic value of assets	238.8
Calculation of EVA™	
NOPAT	\$m 9.8
Deduct: capital charge (\$238.8 x 9.6%) (W1)	(22.9)
EVA™	(13.1)
W1 – Weighted average cost of capital (WACC)	
Cost of equity:	12.0%
After tax cost of debt:	8.0% (10.0% x (1 – 20%))
WACC:	9.6% (40.0% x 12%) + (60.0% x 8.0%)

PM
calc to
out int

Nopat

- + account dep
- economic dep
- + wacc int
- tax on int
- reduction in bad debt provision
- + advertising campaign

++
++
(++)
++
(++)
(++)
++
2
mean

Nopat

$$\text{Nopat} = \text{Revenue} - (\text{Cost of goods sold} + \text{overhead})$$

$$= (\text{Revenue} - \text{Cost of goods sold}) / (\text{Revenue} - \text{Cost of goods sold})$$

→ CGX

→ WACC

$$\text{ke} = \text{cpto}$$

$$\text{kd} = \text{dابت}$$

$$\text{Kb} = \text{bank}$$

$$\text{kp} = \text{P&F SH}$$

Environmental Management Account

EMA → Pm → SBL / APm

what to study

→ Environmental Cost ✓

→ US environmental protection agency → E.P.A. ✓

→ Reasons for focusing on EMA ✓

→ identifying environmental costs and types ↗

→ **Account for environmental costs**

↳ how much you are disturbing the envirn.

Environmental Cost

↳ the cost that impacts our environment and that comes from the activities that we do for our daily operations

what you consider as environment

→ air → earth → machine/life
→ wild life → water

It is difficult to identify the cost involved against environment and to control them. It is hidden inside general overhead.

↳ Quality cost ↳ ENVIRONMENT into different ledger

Some important definitions

Environmental prevention Cost ↳ imposes certain control over it to damage.

Environmental detection Cost

Activities undertaken to prevent environmental impacts before they occur. ↳ less proactive
→ high focus on environment → due to many factors

Environmental correction Cost

Cost involved with establishing whether activities are in compliance with environmental standards.

↳ don't want negative publicity

Environmental internal failure Cost

Costs of activities that must be undertaken when business creates wastes but are not external in environment

↓

↳ general wastes → but not external in environment

Environmental external failure Cost

Costs that arises when a business is releasing harmful wastes in environment ↓

↳ general wastes → released that into environment

US Environmental Protection Agency classification (E.P.A.)

↳ act → which can be tested obviously

Classification

→ Convention Costs

Definition ↳ maximum P.M.

Reduced use of overheads to benefit environment

→ potentially hidden cost

Impact Cost that arises due to environmental damage and is hidden in costs.

↳ can differ

→ Contingent cost

It is an estimate that there will be the damage through your activities. It will arise at later date

→ image and relationship cost

Cost incurred to protect the brand image.

↳ present you as a green friendly entity.

Reasons for focusing on EMA

→ Customer is focused towards green product itself

→ Companies have significant environmental contribution

↳ single factor → environmental change ×
↳ entity close

→ world wide regulation

↳ std/laws that protects environment
↳ legal → EMA

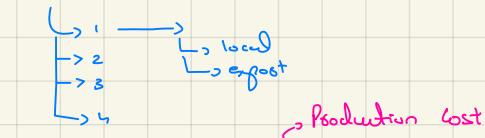
→ pressure groups

↳ negatively market based image

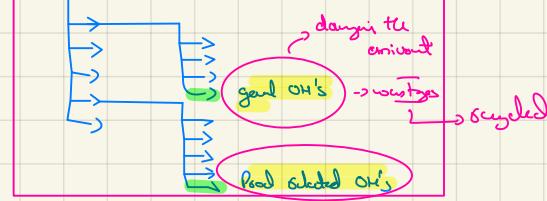
Identifying environmental costs

↳ days drive into chart of accounts of an entity → firstly, understand the processes entity follows

Revenue



C.O.



G.P.

S&D



→ thus know they have environmental impact, they contribute to environment as well.

Internal cost

Precautionary cost that entity's have taken to save environment

→ improved systems and checks

→ waste disposal cost

→ product take back cost

↳ notes

→ upfront cost

↳ obtain permits

↳ promised to give back in same conditions

→ regulatory cost

↳ extra cost incurred by box

External cost

Impact on environment you couldn't control

→ energy and water

↳ basic necessity of production

→ forest degradation

↳ part of your business

→ health care cost

→ carbon emission cost

Accounting for Environment → dedicated resource

Basic criteria

→ have or make a digest → environmental digest

Primary role

→ focus on activities as processes of an

making control entity

to damage → calculate environmental impact of company

loss → report it to senior management

→ Balance out negative impacts with positive by costing damage to attributable

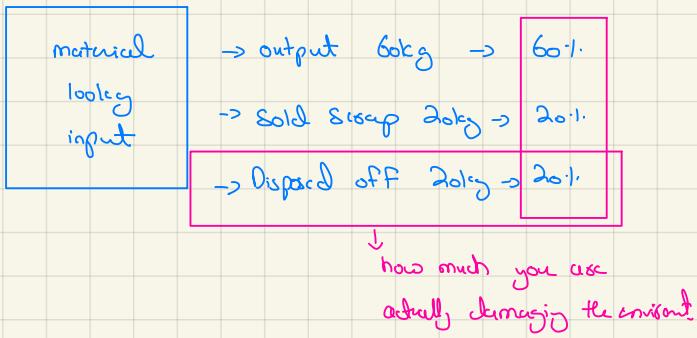
Eg

environmental management committee → balancing the environmental impact

Reporting of EMA

- ① Input/Output Analysis ✓
- ② Activity based costing EMA ✓
- ③ life cycle costing EMA ✓
- ④ Process Cost Accounting ✓

① Input/Output Analysis / Inflow Outflow Analysis



→ this technique records material inflows and gives us the actual output on the basis of that what goes in → should be gone out. this way it will tell us that how much is not been given as output so can be questioned about scraps and wastes.

↳ efficiency of cost focussus.

Activity based Costing on Environment

have a separate pool of environment, and identify a separate driver of that which of the activities does the best of environment - those costs needs to be allocated on product so that you know inputs of products that you are making on environment.

↳ no practical demonstration

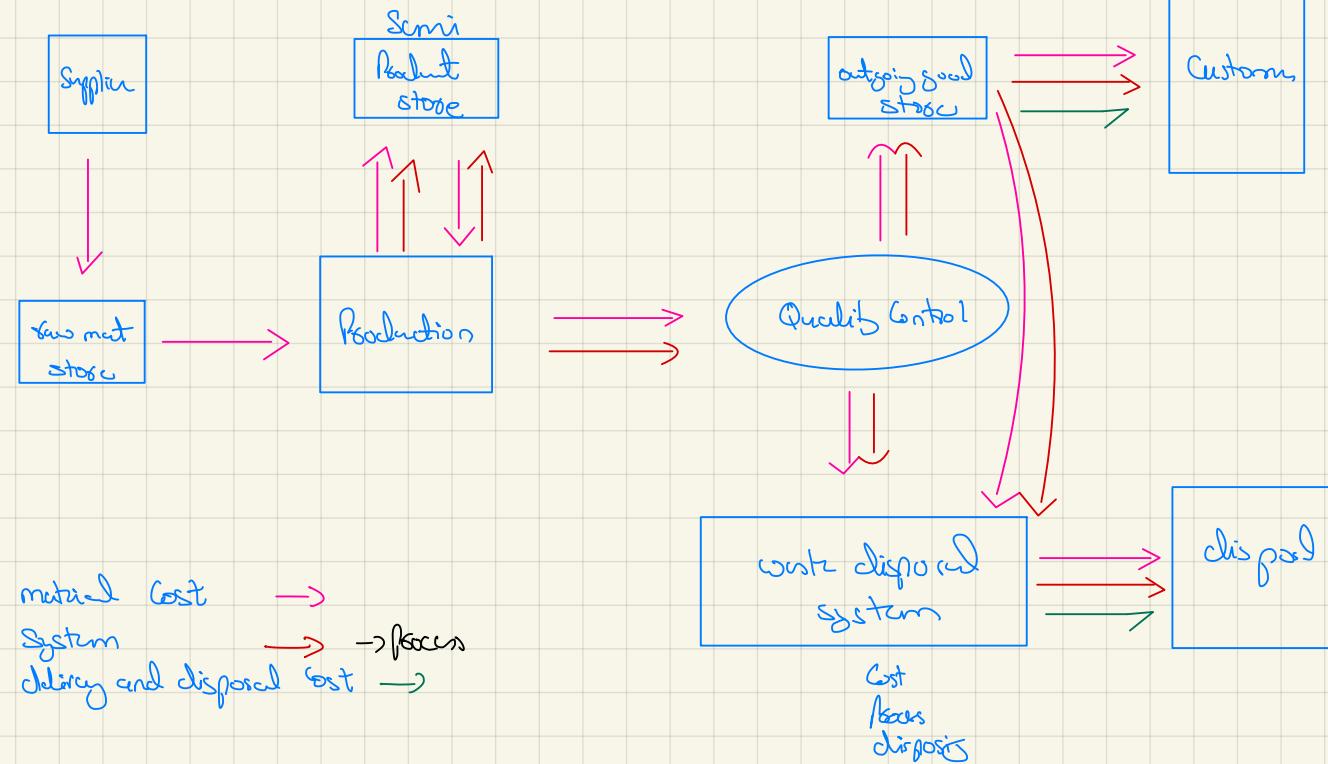
↳ same as ABC

Life Cycle Costing of Environment

within the context of environment accounting, life cycle costing is a technique which requires full environmental costing and therefore should have an estimate of production's impact on environment of particular product.

↳ no practical demonstration
as same as LCC

Process Cost Accounting



7 Environmental management accounting (EMA)

7.1 Introduction

As discussed already in this chapter, organisations are becoming increasingly aware of the environmental implications of their actions (their operations/products/services).



Illustration 19 – Environmental management at BP

BP, one of the world's leading oil and gas companies, describe a number of activities aimed at reducing the environmental impact of the company's operations in its annual review. These include:

- Improving the integrity of its equipment and pipelines to reduce the spillage of oil
- Reducing the emissions of greenhouse gases, which is measured and reported within the Annual Review
- Introducing environmental requirements for new projects
- Supporting the use of market mechanisms to bring about emission reductions across the industry
- Launching a new business providing energy from alternative sources
- Investing in research into biofuels
- Developing and marketing fuel which produces lower emissions compared with standard fuels.

7.2 Traditional management accounting and environmental costs

In section 6 we discussed reporting on environmental matters using sustainability reports or integrated reporting.

Before reporting on these matters the organisation needs to identify its environmental costs (section 7.3), measure its existing performance and monitor the effectiveness of any environmental-related activities undertaken.

However, traditional management accounting systems were unable to identify or to deal adequately with environmental costs.

As a result, managers were unaware of these costs and had no information with

7.3 Categories of environmental costs

There are four categories of environmental cost that should be identified, measured, monitored and controlled by the organisation.

Environmental cost category	Description	Problem with traditional management accounting system
Conventional costs	Costs having an environmental impact such as raw material and energy costs	Traditional management accounting systems would have 'hidden' these within overheads making it difficult for managers to identify and control them
Contingent costs	Include future compliance costs (such as clear up costs) or remediation costs when a site is decommissioned	Traditional management accounting systems would have focused on annual periods rather than the entire life of a project and therefore managers will have overlooked these costs due to a focus on the short-term
Relationship costs	Image costs such as the cost of producing environmental information for public reporting (including integrated reporting or sustainability reports)	Traditionally management accounting systems would not have adequately captured this cost information meaning that managers were unaware of the existence of these costs or did not realise the extent of these costs
Reputational costs	Costs associated with failing to address environmental issues, for example, lost sales due to brand damage	Ignored by managers who were unaware of the risk of incurring them and hence did not take adequate steps to manage them

A clearer understanding of costs should mean that budgets are more realistic and therefore more useful for planning purposes, such as pricing decisions.

EMA includes environment-related KPIs and targets as part of routine performance monitoring and management appraisal. These will be both financial and non-financial, internal and external and relating to short-term and long-term performance.

EMA will also often benchmark activities against environmental best practice.

7.5 EMA techniques

EMA techniques deliver a means of connecting an organisation's environmental and economic performance and provide a financial incentive for organisations to more consciously consider sustainable aspects of their operations. Four key techniques will be covered below.

Note: The full cost of EMA (for example, adapting the information system so that it is capable of capturing the information required) must be compared with the benefit of EMA.

Activity-based costing (ABC)

ABC was covered in PM and will be discussed in Chapter 3. It can be applied to environment-related costs.

Environment-related costs can be analysed into:

- Costs which can be attributed directly to a cost centre, for example a waste filtration plant. It should be relatively straightforward to identify and, to some extent, control these costs.
- Environment-driven costs which are generally hidden in overheads (for example, conventional costs). ABC will aim to separately identify and control these costs:
 - The costs are removed from general overheads and traced to individual environmental-related cost pools for the products or services.
 - This means that cost drivers are determined for these costs and products are charged for the use of these environmental costs based on the amount of cost drivers that they contribute to the activity.
 - This should result in a more realistic product cost.
 - It should also result in better control of environment-related costs by reducing the incidental cost drivers or eliminating certain activities.

Note: Much of the detail covered in Chapter 3, for example on the steps involved in ABC and the evaluation of ABC is relevant when discussing its use in EMA.

Input-output analysis

This technique focuses on waste in processes. It records material inflows and balances this with outflows on the basis that what comes in, must go out.

For example, if 100 kg of materials have been bought and only 90 kg of materials have been produced, then the 10 kg difference must be accounted for in some way. It may be, for example, that 20% of this difference (i.e. 2 kg) has been sold as scrap and 80% (i.e. 8 kg) of it is waste.

By accounting for outputs in this way, both in terms of physical quantities, and, at the end of the process, in monetary terms too, businesses are forced to focus on environmental costs.

Flow cost accounting

There are similarities between input-output analysis and another EMA technique called flow cost accounting (FCA).

This technique uses not only material flows, but also the organisational structure; looking at material flows and material losses incurred at various stages of the production process.

It makes material flows transparent by looking at the physical quantities involved, their costs and their value. The costs can be divided into different types (an example is given in Illustration 4 below) and the values and costs of each of these types can then be calculated.

The aim of flow cost accounting is to reduce the quantity of materials which, as well as having a positive effect on the environment, should have a positive effect on the organisation's total costs in the long run.

contributor towards global warming).

7.4 What is EMA?

EMA was developed in recognition that environmental costs were often left out of or not identified in traditional management accounting techniques leading to ill-informed or poor decision making, with both adverse environmental and economic consequences.

EMA is concerned with the accounting information needs of managers in relation to the organisation's activities that affect the environment as well as environment-related impacts of the organisation. It involves the identification and estimation of the financial and non-financial costs of environmental-related activities with a view to control and reduce these costs.

As mentioned in the definition above, EMA identifies and estimates the costs of environment-related activities (covered in section 7.3) and seeks to control these costs. For example:

- Identifies and separately monitors the usage and cost of resources such as water, electricity and fuel (conventional costs) and enables these costs to be reduced, for example through redesigning the product or the production process. ABC and lifecycle costing are effective techniques here (see section 7.5).
- Estimates future contingent costs ensuring they form part of any investment decision and giving scope upfront to reduce these costs through product or process redesign. Lifecycle costing is an effective technique here (see section 7.5).
- Makes managers aware of relationship costs in order to focus their attention on building these costs into project appraisal and taking steps to potentially reduce these costs. Lifecycle costing is an effective technique here (see section 7.5).
- Makes managers aware of reputational costs in order to focus their attention on managing the risk of them occurring.

Importantly, the focus of EMA is not entirely on financial costs but it also considers the non-financial environmental cost or benefit of any decisions made.

Advantages and disadvantages of ABC

Advantages	Disadvantages
<ul style="list-style-type: none"> • Better/fairer product costs. • Improved pricing – so that the products which have the biggest environmental impact reflect this by having higher selling prices. • Better environmental control. • Facilitates the quantification of cost savings from 'environmentally-friendly' measures. • Should integrate environmental costing into the strategic management process. 	<ul style="list-style-type: none"> • Time consuming. • Expensive to implement. • Determining accurate costs and appropriate cost drivers is difficult. • External costs, i.e. not experienced by the company (e.g. carbon footprint) may still be ignored/unmeasured. • A company that integrates external costs voluntarily may be at a competitive disadvantage to rivals who do not do this. • Some internal environmental costs are intangible (e.g. impact on employee health) and these are still ignored.

Lifecycle costing

Traditional costing techniques based around annual periods may give a misleading impression of the costs and profitability of a product. Lifecycle costing considers the costs and revenues of a product over its whole life rather than one accounting period. Therefore, the full cost of producing a product over its whole life will be taken into account. These costs include costs incurred prior to, during and after production and will therefore include the full environmental cost of producing a product over its whole life.

It is important that all of the environmental costs are identified and included in the initial project appraisal. For example:

- Managers should identify conventional costs such as energy and raw material costs and design products carefully to reduce waste over the manufacturing life of the product
- Managers must pay attention to relationship costs and build these into project appraisal
- Managers must pay attention to decommissioning costs that will be incurred after the end of the project and should plan for these costs.

For an organisation to be able to claim to be financially and environmentally responsible, it must have plans in place to cover these costs.

FGH Telecom (FGH) is one of the largest providers of mobile and fixed line telecommunications in Ostland. The company has recently been reviewing its corporate objectives in the light of its changed business environment. The major new addition to the strategic objectives is under the heading: 'Building a more environmentally friendly business for the future'. It has been recognised that the company needs to make a contribution to ensuring sustainable development in Ostland and reducing its environmental footprint. Consequently, it adopted a goal that, by 2017, it would have reduced its environmental impact by 60% (compared to year 2001).

The reasons for the board's concern are that the telecommunications sector is competitive and the economic environment is increasingly harsh with the markets for debt and equities being particularly poor. On environmental issues, the government and public are calling for change from the business community. It appears that increased regulation and legislation will appear to encourage business towards better performance. The board have recognised that there are threats and opportunities from these trends. It wants to ensure that it is monitoring these factors and so it has asked for an analysis of the business environment with suggestions for performance measurement.

Additionally, the company has a large number of employees working across its network. Therefore, there are large demands for business travel. FGH runs a large fleet of commercial vehicles in order to service its network along with a company car scheme for its managers. The manager in charge of the company's travel budget is reviewing data on carbon dioxide emissions to assess FGH's recent performance.

Recent initiatives within the company to reduce emissions have included

- (a) the introduction in 2010 of a homeworking scheme for employees in order to reduce the amount of commuting to and from their offices and
- (b) a drive to increase the use of teleconferencing facilities by employees.

Data on FGH Telecom:

Carbon Dioxide emissions
Measured in millions of kgs

	2001	2009	2010
Base year			
Commercial Fleet Diesel	105.4	77.7	70.1
Commercial Fleet Petrol	11.6	0.4	0.0
Company Car Diesel	15.1	14.5	12.0
Company Car Petrol	10.3	3.8	2.2
Other road travel (Diesel)	0.5	1.6	1.1
Other road travel (Petrol)	3.1	0.5	0.3
Rail travel	9.2	9.6	3.4
Air Travel (short haul)	5.0	4.4	3.1
Air Travel (long haul)	5.1	7.1	5.4
Hire Cars (Diesel)	0.6	1.8	2.9
Hire Cars (Petrol)	6.7	6.1	6.1
Total	172.6	127.5	106.6

Required:

- (a) Perform an analysis of FGH's business environment to identify factors which will affect its environmental strategy. For each of these factors, suggest performance indicators which will allow FGH to monitor its progress. (8 marks)

- (b) Evaluate the data given on carbon dioxide emissions using suitable indicators. Identify trends from within the data and comment on whether the company's behaviour is consistent with meeting its targets. (9 marks)

- (c) Suggest further data that the company could collect in order to improve its analysis and explain how this data could be used to measure the effectiveness of the reduction initiatives mentioned. (3 marks)

(20 marks)

Maxwell Electricity Generation (Maxwell) is an electricity-generating firm producing power for industry and the general public in the country of Deeland. In the past, the company has been dominated by the need to make suitable returns on capital for its shareholders.

All power stations work in broadly the same way by taking in fuel (coal, gas or nuclear) and producing electricity and waste products.

Maxwell has the following mix of power stations:

Power station type	Details for each type of station			Totals for Maxwell		
	Maximum generating power (MW)	Operating cost of electricity (\$/MWh)	Capital cost (\$m)	Number of stations	Total capital invested (\$m)	Total CO2 emissions (million tonnes)
Coal	(small)	300	25	1,320	4	5,280
	(large)	600	25	2,640	4	10,560
Gas	(small)	300	50	300	8	2,400
	(large)	900	50	900	2	1,800
Nuclear	1,200	20	6,000	2	12,000	0.50
					32,040	26.51

Notes:

1. Maximum generating power is the output of the station measured in megawatts (MW) at 100% operating capacity. The electricity produced by a station is measured in megawatt hours (MWh).
2. It is assumed that the same load factor applies across all the different types of station, i.e. they are working at the same percentage of capacity throughout the year.
3. Operating cost of electricity is the cost before the cost of financing the capital invested in a station.
4. The CO2 (carbon dioxide) emissions are estimated based on industry standard figures

for similar stations.

5. Capital costs and CO2 emission figures are current best estimates.

The business has two alternative plans (plans 1a and 1b) to maintain current generating capacity while plan 2 will grow the business.

Plan 1a

Build a new nuclear power station (the same as the existing nuclear type) to replace one of the 300 MW coal stations, one of the 600 MW coal stations and, also, one of the 300 MW gas stations. The stations being replaced are all reaching the end of their useful lives.

Plan 1b

Replace the gas and coal stations mentioned in plan 1a with equivalent gas and coal stations, thus maintaining the current generating mix.

Plan 2

In order to grow the business, a new nuclear station is being considered in combination with one of plan 1a or 1b. This new nuclear station would be the same as the existing stations.

Maxwell is trying to raise finance for either plan 1a or plan 1b and, in addition to one of these plans, plan 2. A nuclear plant takes about five years to build (assuming no regulatory difficulties or problems over the design choice). It has a working life of 40 years and costs about \$1bn at current prices to decommission although this estimate is uncertain as each site is unique in the decommissioning difficulties which it presents.

The government of Deeland has joined the international community in pledging to have greater concern for the environment. Initially, it has stated that there is a national goal to reduce carbon dioxide emissions by 20% in the next five years. The government is aware that electricity demand is estimated to rise by around 10% over the next five years; nevertheless, it is strongly encouraging businesses to help achieve this reduction in CO2 emissions. There is a proposal to raise a carbon tax on CO2 emissions in order to encourage reductions. The government is also concerned that there are other pollutants

emitted by power stations but has decided to focus efforts on CO2 initially, as it is a key cause of climate change.

In order to join the wider community in achieving these aims and as one of the major electricity generators in Deeland, Maxwell has stated its own environmental goal as: 'to help reach national targets for reduction in CO2 emissions while maintaining our ability to contribute to the electricity needs of the people of Deeland.'

The finance director is interested in broadening environmental reporting within the company and has asked you as his performance measurement expert to explain how input/output analysis would help. He needs to know how this will broaden performance measurement at Maxwell. Lastly, he wants to understand the impact of this analysis on the management information systems which are currently set up for periodic financial reporting purposes.

Required:

- (a) Using Maxwell's stated environmental goal, assess the proposed investment plans 1a and 2. (10 marks)

The following exhibits, available on the left-hand side of the screen, provide information relevant to the question:

1. Company information - the background, main objective and product range of the company: Sgoltaire.
2. Kayland manufacturing plant - details of a proposal to build a new manufacturing plant overseas in Kayland, to produce Chemical K.
3. Environmental impact of Chemical K - information relating to the impact that the production of Chemical K will have on the environment.
4. Environmental management accounting - details of work required on how environmental management accounting (EMA) may be used to improve business performance.
5. Appendix 1 - the present value (PV) of the costs to decommission and clean up the site used for manufacturing Chemical K.

This information should be used to answer the question requirements within the response option provided.

Sgoltaire is a large company listed on the Jayland stock exchange. Its main objective is to maximise the long-term wealth of its shareholders. The largest shareholder is a pension fund which only invests in companies which behave ethically towards their stakeholders and the environment. All companies listed in Jayland must produce an annual corporate sustainability report (CSR).

Sgoltaire manufactures a diverse range of chemicals, ranging from those for use in industrial processes to household detergents and cleaning products. Sgoltaire is a well-known and trusted brand in Jayland. Many of its household products command premium prices because they use ingredients and manufacturing processes which cause less harm to the environment than those of competitors.

As part of a wider strategy, Sgoltaire plans to produce a new product, Chemical K, which will require the building of a new manufacturing plant. The company has always manufactured in Jayland, but in order to increase business performance, the board is considering whether to build the new plant overseas at a site identified in Kayland.

Due to high unemployment in Kayland, labour costs are lower there. Environmental regulations are also much less strict than in Jayland. Kayland is a hot, dry country where there is often insufficient water available to meet the needs of the population and their livestock. Sgoltaire's largest shareholder, the pension fund, is aware that the company lacks experience

in operating outside Jayland. Because of this, the shareholder is concerned that the board may pay insufficient attention to the impact of ethical issues on both strategy formulation and business performance, when taking the decision whether to manufacture in Kayland.

The manufacture of Chemical K would consume large volumes of water taken from a nearby river. To comply with the limited environmental regulations in Kayland, some of this water would be used to dilute a toxic waste product, Waste Product A (WPA), which arises from the manufacturing process. The diluted WPA would then be discharged back into the nearby river. The discharge of WPA into rivers is not permitted in Sgoltaire's home country of Jayland because there is some scientific evidence that contact with WPA may cause serious long-term health problems to people, which may not become apparent for many years.

Production of Chemical K would cease after ten years and the plant must be decommissioned. The site would remain contaminated with harmful chemicals for many years after decommissioning, unless a separate cleaning operation is undertaken.

It has been suggested that Sgoltaire uses environmental management accounting (EMA) to improve business performance. EMA is the identification, collection and analysis of information related to the physical and financial impact of an organisation's activities on the environment.

The board wants advice on how EMA will help the following four areas:

1. Calculating costs
2. Investment appraisal
3. Setting performance measures and targets
4. Product pricing

In relation to investment appraisal, the board calculated that the net present value (NPV) of the proposal to manufacture Chemical K in Kayland is \$240m, compared to \$200m if the manufacturing was done in Jayland. It has since been identified that the costs of decommissioning the plant and cleaning the site were not included in these calculations, so the board has now begun the work of estimating the present values of the costs to decommission and clean the two possible sites (Appendix 1).

Present value of the costs of decommissioning the plant and cleaning the site

Cost	\$m Jayland	\$m Kayland
Decommissioning the plant ¹	20	30
Cleaning the site ²	60	—
Total	80	30

1. The board has estimated that because of logistical difficulties due to Kayland being 8,000 km from Jayland, decommissioning costs, which do not include the costs of cleaning the site, would be 50% higher than in Jayland.

2. The board has not yet estimated the costs of cleaning the site in Kayland, though because of the same logistical difficulties which apply to decommissioning costs, costs of cleaning the site in Kayland will also be higher than in Jayland.

It is now 1 September 20X5.

(a) Advise the board on how ethical issues may affect the decision to manufacture in Kayland.
(10 marks)

(b) Advise the board on how EMA will help Sgoltaire in the four areas identified.
(15 marks)