

PERFORMANCE MEASUREMENT (1)
FINANCIAL PERFORMANCE:

GROWTH: Revenue / Profits / EBITDA / Market Share

PROFITABILITY: Absolute profit / ROCE / Profit margin

GEARING: Gearing ratio

LIQUIDITY: Current ratio / Net cash flow

SHAREHOLDERS: EPS / Share price / PE ratio

Always comment on any significant changes (e.g. new issue of shares) and likely reasons/effects (e.g. new investment - therefore possibly more profit in the future)

PERFORMANCE MEASUREMENT (2)

FITZGERALD AND MOON'S BUILDING BLOCKS

Look at performance under six headings:

* FINANCIAL

* QUALITY

* FLEXIBILITY

* EFFICIENCY (resource utilisation)

* INNOVATION

* COMPETITIVENESS

PERFORMANCE MEASUREMENT (3)

KAPLAN & NORTON'S BALANCED SCORECARD

The Four Perspectives

The Balanced Scorecard groups performance measures into four general perspectives:

- Financial perspective;
- Customer perspective;
- Internal process perspective;
- Innovation and Learning perspective.

According to each perspective of the Balanced Scorecard, a number of key performance indicators can be used such as:

Financial

- Cash flow
- Return on Investment
- Return on capital employed
- Return on equity

Customer

- Delivery Performance to Customer - by Date
- Delivery Performance to Customer - by Quality
- Customer satisfaction rate
- Customer retention rate

Internal Business Processes

- Number of Activities
- Accident Ratios
- Equipment Effectiveness

Innovation and Learning

- New innovations
- Training per employee
- Internal Promotions %
- Employee Turnover

Under each perspective we should have a Goal; a Measure; and a Statistic

E.g. under the Financial Perspective, a Goal may be 'survival'; a relevant Measure for this Goal may be 'net cash flow'; and the Statistic would be an actual figure for the net cash flow.

PERFORMANCE MEASUREMENT (4) **NOT-FOR-PROFIT ORGANISATIONS**

Overall objective is value-for-money

ECONOMY

Are we paying a fair price for resources?
Tenders / benchmarking

EFFICIENCY

Resource utilisation rates

EFFECTIVENESS

'success' rates

PERFORMANCE MEASUREMENT (5)

DIVISIONAL PERFORMANCE MEASUREMENT

Type of responsibility centre:

Cost centre:

Manager has authority for decisions over costs (but not revenue)

Revenue centre:

Manager has authority for decisions over revenue (but not costs)

Profit centre:

Manager has authority for decisions over costs and revenues (but not capital investment decisions)

Investment centre:

Manager has authority for decisions over costs, revenues, and new capital investment.

Controllable factors:

The manager should only be assessed over those items over which he has control.

For example, if a manager is given authority to make decisions over everything except salary increases which are dictated by central management, then it would be unfair to include salaries in his performance measurement.

If (for example) it is a profit centre, then for the purposes of measuring his performance the profit of the division should be calculated ignoring salaries.

PERFORMANCE MEASUREMENT (6)
RETURN ON INVESTMENT V RESIDUAL INCOME

Division X of Y plc is currently reporting profits of \$125,000 p.a. on capital employed of \$800,000
A new project is being considered which will cost \$100,000 and is expected to generate profits of \$15,000 p.a.

- (a) Calculate the Return on Investment for Division X, with and without acceptance of the new project.**
- (b) Calculate the Residual Income of Division X, with and without the new project. Y plc calculates Residual Income using a notional interest rate of 14%.**

PERFORMANCE MEASUREMENT (7)
ECONOMIC VALUE ADDED

Z plc Accounts

Income Statement

	\$
Operating profit	7,000
Interest	<u>(1,000)</u>
	6,000
Tax at 30%	<u>(1,800)</u>
Profit after tax	<u>\$4,200</u>

Balance Sheet

	\$
Net assets	<u>\$30,000</u>
Share Capital (\$1 shares)	5,000
Reserves	<u>15,000</u>
	20,000
Non current liabilities	
10% Bank loan	<u>10,000</u>
	<u>\$30,000</u>

The market value of the shares is \$5 per share.

The cost of equity finance is 18%

Calculate the Economic Value Added (EVA)

UNCERTAINTY

Sales per week

<i>Sales (units)</i>	<i>Probability</i>
10	0.3
20	0.5
30	0.2

Selling price: \$20 p.u.

Cost: \$10 p.u.

Any unsold units must be sold as scrap for \$1 p.u.

Units must be purchased each week before demand is known.

(a) Expected Values

(b) Maximax

(c) Maximin

(d) Minimax Regret

What is the maximum amount it would be worth paying in order to have perfect knowledge of the level of demand?

LEARNING CURVES

As cumulative output doubles, the cumulative average time (labour cost) per unit falls to a fixed percentage of the previous average time (labour cost)

Example 1

First batch takes 100 hours to produce. There is a 75% learning effect.

How long will it take to produce another 7 batches.

Example 2

First batch takes 60 hours to produce. There is an 80% learning effect.

How long will it take to produce the 50th batch?

Learning curve formula: $y = ax^b$

y = average time per batch

a = time for initial batch

x = number of batches

b = learning factor

$$b = \frac{\log r}{\log 2}$$

TRANSFER PRICING

OBJECTIVES:

- * Goal congruence
- * Performance appraisal
- * Divisional autonomy

OVERALL:

- * Must maximise group profit

PRACTICAL:

- * T.P. often fixed by Head Office

- * Problem - loss of autonomy

 - possibility of dysfunctional decisions

APPROACH:

Allow individual managers to negotiate the transfer price

Selling division:

Minimum T.P. = Marginal cost + opportunity cost

Receiving division:

Maximum T.P. is lower of

- (a) external purchase price (on intermediate market)
and
- (b) net marginal revenue (selling price less costs of receiving division)

TRANSFER PRICING

[S = selling division; R= receiving division]

	S	R
(1) Variable production cost	15	8
Final selling price \$30		

(2) As (1), but intermediate market exists.

S can sell intermediate market at \$18; R can buy on intermediate market at \$20

(a) S has unlimited production capacity and there is limited demand on the intermediate market

(b) S has limited production capacity and there is unlimited demand on the intermediate market

(3) S has restricted capacity to make A and B

R wants product A.

	A	B
S's Variable production cost per unit	80	120
S's Intermediate market price per unit	100	150

PRODUCT LIFE CYCLE

There are four main stages in a product's life cycle:

Introduction; Growth; Maturity; and, Decline

Understanding the product life-cycle encourages a more long-term view of the likely returns from a product and the amount worth investing in a new product.

In addition, understanding as to which phase the product is in will help determine the appropriate pricing strategy at each stage.

SIX SIGMA

Six Sigma was originally developed as a set of practices designed to improve business processes and eliminate defects.

In Six Sigma, a defect is defined as anything that could lead to customer dissatisfaction.

Six Sigma asserts that

- * Continuous efforts to achieve stable and predictable process results (i.e. reduce process variation) are of vital importance to business success.
- * Manufacturing and business processes have characteristics that can be measured, analyzed, improved and controlled.
- * Achieving sustained quality improvement requires commitment from the entire organization, particularly from top-level management.

Features that set Six Sigma apart from previous quality improvement initiatives include

- * A clear focus on achieving measurable and quantifiable financial returns from any Six Sigma project.
- * An increased emphasis on strong and passionate management leadership and support.
- * A special infrastructure of "Champions", "Master Black Belts", "Black Belts" etc. to lead and implement the Six Sigma approach.
- * A clear commitment to making decisions on the basis of verifiable data, rather than assumptions and guesswork.

A key methodology of Six Sigma is DMAIC.

The basic methodology consists of the following five steps:

- * **D**efine process improvement goals that are consistent with customer demands and the enterprise strategy.
- * **M**easure key aspects of the current process and collect relevant data.
- * **A**nalyze the data to verify cause-and-effect relationships. Determine what the relationships are, and attempt to ensure that all factors have been considered.
- * **I**mprove or optimize the process based upon data analysis using techniques like Design of Experiments.
- * **C**ontrol to ensure that any deviations from target are corrected before they result in defects. Set up pilot runs to establish process capability, move on to production, set up control mechanisms and continuously monitor the process.

DEDICATED CELLS

A cell is a team of people working together instead of individuals working alone on a task.

The potential benefits include:

- * members of the team feel more responsible for the teams performance as team spirit increases
- * knowledge is shared within the team and as a result the knowledge of each member improves
- * members of the team support each other
- * individual members have more scope for specialization on areas dealt with by the team

CHARACTERISTICS OF SERVICE VERSUS MANUFACTURING BUSINESSES

It is harder to measure the quality of a business than the quality of a service because of the following differences between the two:

INTANGIBILITY

A service cannot be taken home with you as a product can

SIMULTANEITY

A service is used at the same time as it is performed

HETEROGENEITY

Many services are non-standard (each one is different) whereas many products are all of identical products

PERISHABILITY

A service is immediately 'used-up' - it cannot be stored like a product

VALUE ANALYSIS

Value analysis attempts to find the least-cost method of making a product or providing a service that achieves the desired outcome.

Instead of just trying to cut costs everywhere, value analysis analyses costs between those that are value-added (i.e. add value to the product/service from the perspective of the customer and affect the customers buying decision) and those that are non-value-added (i.e. do not add value to the product/service in the eyes of the customer).

Wherever possible, non-value-added activities should be eliminated.

Non-value-added activities could include such things as repairing faulty work and keeping unnecessary levels of stock.

BUDGETING

Purpose:

- Planning; Control; Coordination; Motivation(targets/performance measurement)

Incremental budgeting

- Base on last years actual results. Adjust for inflation / volume changes

Zero based budgeting

- For each cost:
- Identify alternatives available / cost them out / choose the best

Activity based budgeting

- Same idea as zero-based, but tie in with company strategy.
- Identify critical success factors and apply zero-based approach to whole activity

'Beyond Budgeting' (article)

STRATEGIC MANAGEMENT ACCOUNTING

- * Traditional management accounting is looking backwards – was performance better or worse than budget? etc..
- * Strategic management accounting is trying to look forward and plan how to improve in the future
- * Advantages of strategic planning:
 - provides long-term plans
 - clarifies objectives
 - identifies risks
 - forces management to think and make decisions
 - ensures consistency of long-term/medium-term/short-term plans
- * Tools:
 - SWOT analysis
 - Boston Matrix/ Ansoff's product-market matrix / Porter's five forces model (see article)
- * Freewheeling opportunism – no long-term plans – decide on opportunities as they arise
- * Need to identify and focus on critical success factors
 - monitoring (maintaining existing business)
 - building (growing the business)
- * Need to decide on performance indicators for CSF's
- * Enterprise Resource Planning System (software) – integrates all management information and makes it all easily/immediately accessible to users

COST OF QUALITY

Costs of Non-Conformance (Poor Quality)

* EXTERNAL

- e.g. - loss of goodwill
- replacing poor quality goods
- guarantee work

* INTERNAL

- e.g. - waste of materials
- slow working
- repeat working

Costs of Conformance (Getting Better Quality)

* PREVENTION

- e.g. - cost of employing better quality workers
- training
- purchase better quality materials

* APPRAISAL

- e.g. - quality control of finished goods
- monitoring at each stage of production process

PROBLEMS WITH BUDGETS

One of the main purposes of a budget is to motivate managers – they will be rewarded if they do better than budget.

However there can be problems, including:

- 1 Managers are tempted to over-budget (budget padding) and budget figures that are easy for them to beat.
- 2 The budget rapidly becomes unrealistic and risks losing the motivational aspect unless it is continually updated/revised.
- 3 It is impossible to predict the economic climate when preparing the budget, and upturns in the economy make it easier for the manager to beat budget, without actions on their part. (and similarly the reverse effect for downturns in the economy.
- 4 In the same way as item (3), changes in the market and the competition will effect whether the manager does better or worse than budget.
- 5 It is impossible for the original budget to take account of new opportunities that might arise during the period. There is a danger that managers will not be prepared to consider new opportunities because they are not in the budget (additional expenses involved might result in them overspending as against budget.
- 6 If managers are rewarded simply for achieving budget, then there is no incentive for them to do better still. This is more of a problem with the design of the reward scheme than the budget itself, but consideration does need to be given to relating the level of the reward to the extent to which the manager does better than budget.

The budget needs to be continually revised to take into account changing circumstances if it is to continually 'stretch' the managers and encourage them to perform better.

Alternatively/additionally attempts should be made to compare managers performance with that of other managers with similar responsibilities in the company (or in other companies) rather than against a budget that is likely to be unrealistic because of the types of problems listed.

REWARD SCHEMES

Employees are commonly rewarded based on their performance against pre-established measures.

Potential benefits of performance related pay include:

- 1 The employee will be more motivated to improve his/her performance.
- 2 The measures used inform the employee what actions the company considers to be important.
- 3 A well-designed scheme can help keep good employees from looking to leave the company.

However, when a reward scheme is being designed it is necessary to be aware of problems that can arise, including the following:

- 1 Employees will focus all their efforts on whatever performance measures are being applied to them. They will pay less attention to other areas not covered by their reward scheme, even though they may be important to the company.

It is necessary to identify the key factors that are necessary for the success of the company, and have a range of measures that cover these key factors.

- 2 It is natural for employees to focus on how well they will be measured in the short-term rather than the long-term effect of their actions.

The performance measures should include measures that will be good for the company in the longer term – e.g. include non-financial measures such as quality.

Thought should be given to making the reward itself encourage long-term thinking – e.g. reward employees in the form of shares in the company that must be held for a minimum period before they can sell them.

- 3 Many goals of the company depend on the actions of a group of employees working together rather than those of an individual employee.

Thought needs to be given to making part of the reward (bonus) for each employee based on performance measure applied to the group, in addition to performance measures applied to the individual.

ENVIRONMENTAL MANAGEMENT ACCOUNTING

Environmental costs comprise such things as electricity, water, and the disposal of waste. In addition there is the effect on the image of the company of not being environmentally friendly, although this is much harder to quantify.

For the exam you should be able to write briefly about four techniques that may be useful:

INFLOW / OUTFLOW ANALYSIS

This approach balances the quantity of resources input with the quantity that is output (either as production or as waste).

Resources include not just raw materials, but also ones such as electricity.

Measuring these in physical quantities and in monetary terms forces the business to focus on environmental costs.

FLOW COST ACCOUNTING

This is really inflow / outflow analysis, but concentrates on material flows in each of three categories:

- Material: the resources used in storing raw materials and in production
- System: the resources used in storing finished goods and in quality control
- Delivery & disposal: the resources used in delivering to the customer and in disposing of any waste.

LIFE-CYCLE COSTING

Ensuring that environmental costs such as the disposal of waste are included in the life-cycle costs. It may be possible to design-out these costs before the product is launched.

ENVIRONMENTAL ACTIVITY BASED COSTING

Environmental costs should be allocated to their own cost centres rather than simply being included in general overheads.

As with ABC in general, this focuses more attention on these costs and potentially leads to greater efficiency and cost reduction.

TRADITIONAL ABSORPTION V ACTIVITY BASED COSTING

A company manufactures two products: X and Y.

Information is available as follows:

(a)	Product	Total production	Labour time per unit
	X	1,000	0.5 hours
	Y	100	1.0 hour

Total overhead: \$16,500

Calculate the overhead content of each product using traditional absorption methods.

(b) The total overhead has now been broken down into:

Materials handling	4,800
Production scheduling	6,500
Machine-related	5,200

	Product X	Product Y
Number of purchase orders received (total)	8	4
Number of production runs (total)	3	2
Number of machine operations (per unit)	2	6

Recalculate the overhead content of each product using an activity-based costing approach.

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$ Where r = discount rate n = number of periods until payment

Periods (n)	Discount rate (r)										
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	2
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	3
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	4
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	5
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	6
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	7
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	8
9	0.941	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	9
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	10
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.305	11
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	12
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	13
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	14
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694	2
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579	3
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482	4
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402	5
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335	6
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279	7
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233	8
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194	9
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162	10
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135	11
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112	12
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093	13
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078	14
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065	15

Annuity Table

Present value of an annuity of 1 i.e. $\frac{1 - (1 + r)^{-n}}{r}$

Where r = discount rate
 n = number of periods

Periods (n)	Discount rate (r)										
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	2
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	3
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	4
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	5
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	6
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	7
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	8
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	9
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	10
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	11
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	12
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103	13
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367	14
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	2
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	3
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	4
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	5
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	6
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	7
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	8
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	9
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	10
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	11
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	12
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	13
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	14
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	15

Paper P5 - 'Best' numbers questions

4	<input type="checkbox"/>	
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63	<input type="checkbox"/>	

Paper P5 - 'Best' written questions

	1	<input type="checkbox"/>	
	10	<input type="checkbox"/>	
	11	<input type="checkbox"/>	
	12	<input type="checkbox"/>	
	17	<input type="checkbox"/>	
	21	<input type="checkbox"/>	
	25	<input type="checkbox"/>	
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	53	<input type="checkbox"/>	
	65	<input type="checkbox"/>	
	68	<input type="checkbox"/>	