profit. Thus, making the profit more sensitive to volatility in the volume of output. Activities that are capital-intensive tend to have high operational gearing, this is because renting or owning capital equipment gives rise to higher fixed costs, but it can also give rise to lower variable costs.

The profit volume chart (PV chart) is similar to the BEP. The PV chart is plotted against volume of activity, and shows the BEP as a point on the volume of activity line. Its just a clarification that makes profit or loss directly readable.

The variable cost line (for example) may not in reality be straight because of economies of scale which is not available on lower levels of output. Total revenue may also decline at a certain point due to the need of lowering the price to increase and push sales. These curves could lead to more than one BEP. Thus, solely where there is significant economies or diseconomies of scale should those be taken into account. Hence, for most businesses, the possible volume of activity range is quite narrow (relevant range).

If a business fails to reach the BEP, it must remedy this by taking actions in either increases sales revenue or reducing costs.

There are three general problems with the BEP;

- Non-linear relationships;
  - Generally assumes the total variable costs and total revenue lines to be perfectly straight when plotted against volume of output, which is very unlikely to happen IRL. However, over the relevant range of businesses its ok to assume that curved lines are in fact straight.

- Stepped fixed costs;
  - Fixed costs do vary over different time periods, so greater care must be taken when making assumptions of these fixed costs.

- Multi-product businesses;
  - When a business sells more than one product, it can pose a problem for the break-even analysis since additional sales of one product may affect sales of another of the business's products. There is also the problem of identifying the fixed cost of the different products, and fixed inputs may relate to both products. You can divide the fixed costs according to the product, but its arbitrary and would undermine the usage and verifiability of the break-even analysis.

For decisions involving;

- Relatively small variations from existing practice and/or
- Relatively limited periods of time

For these decisions, fixed costs is irrelevant. When making these kind of decisions, the key strategic objective should be to increase shareholders' wealth. Since these decisions are short-term by nature, wealth will be increased by generating net cash inflows.

In marginal analysis, only costs and revenues that vary with the decision are considered. This is because marginal analysis is usually applied to minor alterations in the level of activity. It tends to be true that the variable costs per unit will be equal to the marginal cost, which is the additional costs of producing one more unit of output. Thus, at a certain point, producing one more unit will increase the fixed cost (stepped fixed costs) and the variable cost will include the increment in the fixed costs.

Marginal analysis is used in four key areas of decision making;

- Pricing/assessing opportunities to enter contracts

    - Shortage of production capacity might be identified (can be overcome by subcontracting products, increase production capacity and higher production in previous months and increasing inventories to meet future higher demand)
- Co-ordination between various sections of the business;
    - Its crucial that the activities of the varies departments and sections of the business are linked so that the activities of one are complementary to those of another. If not, could lead to production stoppages due to shortage of raw materials.
- Motivate managers to perform better;
    - Define a required level of achievement is more likely to motivate managers than just telling them to do something. If the managers understand their part of the business, which is allowed since budgeting is part of the strategic planning, managers will perform better.
- Basis for a system of control;
    - Planned performance compared to actual performance will help managers evaluate their own, and that of their junior associates' work. Establishing this will create the basis for control, since control is all about ensuring events conform to plans. Management by exception is applied if that basis of control is established, and lets the managers allocate more time to those who failed to achieve the budget requirements.
- System of authorisation for managers to spend up to a particular limit;
    - Some activities (staff development and research and development) are allocated a fixed amount of funds at the discretion of senior management. This provides the authority to spend.

The budget setting process is a few steps, as shown below;

- Establish who will take responsibility;
    - Those responsible for setting the budget must have real authority within the business.
        - A budget committee is usually formed to supervise and take responsibility for the budget-setting process.
        - A budget officer is appointed to carry out the technical tasks of the committee, or supervise when they are carried out. Accountants are often given this job.
- Communicate budget guidelines to relevant managers;
    - Its important when drawing up the budgets that the managers are well aware of what the strategic plans are and how the forthcoming budget period is intended to work towards them. Commercial/economic environment awareness is also important.
- Identify the key/limiting factor;
    - Identifying the limiting factor asap is of great help.
- Prepare the budget for the limiting factor;
    - The limiting factor will determine the overall level of activity for the business, which usually is the sales budget since sales demand often is the key factor for holding back growth.
- Prepare draft budgets for all other areas;
    - The other budgets are prepared in such matters to consider the limiting factor.
    - Individual budgets might be set in two ways;
        - Top-down approach is where the senior management of each budget area originates the budget targets, perhaps discussion them with lower levels of management and, as a result, refining them before the final version is produced. More demanding targets for managers, may be lower target commitment.
        - Bottom-up approach the targets are fed upwards from the lowest level. Most junior associates set their targets, which are then incorporated higher up and ultimately in the budget. This allows for greater managers involvement in the budget process, exploit specialisation and expertise by managers and may increase target commitment.
- Review and co-ordinate budgets;
    - The budget committee must review the various budgets and satisfy itself that the budgets are consistent with each other. Normally benefits from a diplomatic approach.
- Prepare the master budgets;
    - The individual operating budgets should provide all of the required information to prepare the master budgets (income statement and balance sheet).
- Communicate the budgets to all interested parties;

    - The formally agreed operating budgets are now passed to the individual managers who will be responsible for the implementation. Hence, senior managers communicating it to the other managers (the targets that are expected to be achieved)
- Monitor performance relative to the budget;
    - Each manager's actual performance is compared with the benchmark of planned performance, which is embodied in the budget.

Where established budgets are proving to be unrealistic, its usually helpful to revise them. they may be unrealistic because certain assumptions made, when he budget were first set, have turned out to be incorrect. This may occur where managers (budget setters) have made poor judgements or when the environment has changes unexpectedly.

Incremental budgeting is when you reuse last year's budget, with some adjustments in factors that might be affecting the forthcoming period (e.g. inflation). Its often used for discretionary budgets, such as research and development and staff training. The budget holder is allocated a sum of money to be spent in the area of activity concerned. Discretionary budgets are often used where there is no close relationship between output and input, and its often only the proposed periodic increases in these budgets that are closely scrutinised.

Zero-base budgeting (ZBB) rests on the philosophy that all spending needs to be justified. All budgets will start from a value of 0 and if given enough evidence which can justify the need of funds, the right amount will be allocated accordingly. Its very time-consuming, and managers whose sphere of responsibility is subject to ZBB can feel threatened by it.

The cash budget is a key budget, thus it reflects the whole business more comprehensively than ofter budgets. And for small businesses, a cash budget might be enough since the need for divisional budgeting doesn't exist based on size.

The cash budget will most likely possess the following features;

- The budget period would be broken down into sub-periods
- The budget would be in columnar form, with a column for each month
- Receipts of cash would be identified under various headings and a total for each month's receipts shown
- Payments of cash would be identified under various headings and a total for each month's payments shown
- The surplus of total cash receipts over payments, for each month would be identified
- The running cash balance would be identified, this would be achieved by taking the balance at the end of the previous month and adjusting it for the surplus or deficit of receipts over payments for the current month

Activity based budgeting (ABB) extends the principles of activity-based costing (ABC). Under a system of (ABB), once the limiting factor has been established, the sales budget is determined. Then, the activities necessary to achieve the budgeted sales are then identified. Budgets for each of the various activities are prepared by multiplying the budgeted usage of the cost driver for the particular activity (determined by the sales budget) by the budgeted rate for the relevant cost driver.

Under ABB, there will be a separate budget for each cost pool, due to that ABB is prepared according to cost-deicing activity, and not function. Through the application of ABC, the factors that cause costs are known and there is a direct linking of costs with output, meaning ABB should provide a better understanding of future resource needs and more accurate budgets. It should also provide a better understanding of the effect on budgeted costs of changes in the usage of the cost driver, due to the relationship between cost drivers, activities and costs.

Control should be improved within an ABB environment for 2 reasons;

- Ideal standards assume perfect operating conditions where there is no inefficiency due to lost production time, defects etc. Its set to encourage employees to strive for perfection and excellence. Two major difficulties are;
  - Not a useful basis for exercising control, the variances are extremely difficult to interpret when the standards are not realistically set.
  - May not achieve their intended purpose of motivation.
- Practical standards do not assume ideal operating conditions. Demand high efficiency, but does also take into account possible defects and lost of production time. They are designed to be challenging yet achievable.

A learning curve is set as the time it takes for workers to get comfortable with producing one unit of output of that product/service. Meaning that the average time will decrease as the worker makes more units. The curve will tend to decrease and then flattens out, as maximum efficiency is reached.

Standards can, beside play the role of measurement of performance, if related to costs, usages, selling prices and so on be used for;

- Measuring operating efficiency
- Product-sourcing decisions
- determining the cost of inventories and work in progress for income measurement purposes
- determining the cost of items for use in pricing decisions

Standards and variances have limited application, many businesses and commercial activities do not have a direct relationship between inputs and outputs. Many expenses of modern business lies in human resources development, advertising, maintenance of equipment and research and development, where the expense is discretionary and there is no direct link to the level of output. Potential problems when applying standard costing techniques are as follows;

- Standards can quickly become out of date as a result of changes in the production process and price changes.
- Factors may affect a variance for which a particular manager is accountable but over which the manager has no control.
- Demarcation between managers' areas of responsibility may be very hard to clarify.
- Once a standard has been met, there is no incentive for the managers or employees to exceed the output or increase quality.
- Standard costing may create incentives for managers and employees to act in undesirable ways.

Perverse incentives created by standard costing relates to labour efficiency variances. Where these variances are calculated for individual employees, and form the basis for their rewards, there is little incentive for them to work co-operatively, thus it may be in the best interest of the business. To remedy this problem, some businesses calculate these variances for groups/subgroups of employees to encourage co-operative work.

The new business environment (more competition, increased technology, wide range of products, shorter life cycles, shorter production runs and automated production processes) has led to;

- Need for more frequent development of standards to deal with frequent changes to the product range
- Change in the focus for control (automated manufacturing requires less labour hours but more direct materials)
- Decline in the importance of monitoring cost and usage variances (automated manufacturing means less deviations from standards relating to costs and usage, and less significant)

Some standards and areas of the production process becomes more important;

- Internal measures, relating to the business process, learning and growth
- Outcomes, measures reflecting outcomes in form of lags
- Performance, measures tat help predict future performances in form of leads
- Hard financial measures
- Soft financial measures

Some believe that too many measures are used, making it too complex and unwisely (narrow, hence unsuccessful. Its also thought that managers are forced to make a trade-off between different dimensions of the balanced scorecard, meaning that if having a finite budget, one manager must decide which investment to pursue.

The deregulation in 1980 serves as the start for increased competition among businesses due to the new technology. This new era of competitiveness not only meant competition for customers, but also for funds. This meant that businesses needed to provide better rate of return to their investors, hence shareholders, in order to acquire the funds needed. Some believe that self-interest of managers is the sole drive behind shareholders maximisation. Because they pose a risk of being replaced or if not managing the business properly, could be acquired/merged with another business, holding managers who are dedicated to maximise their shareholders' returns.

Shareholder value can be defined in 4 steps;
- Setting objectives for the business that reflect the central importance of maximising shareholder returns, setting a clear direction for the business
- Establishing appropriate means of measuring the returns, or value, that have been generated for the shareholders
- Managing the business in such a manner as to promote shareholder returns maximisation. Meaning, setting demanding targets and achieving them through the best possible use of the resources. The use of incentive systems and the embedding of a shareholder value culture throughout the business.
- Measure the shareholder returns over a period of time to see whether the objectives have actually been achieved.

Given a commitment to maximise shareholder returns we must select an appropriate measure that will help us assess the returns to shareholders over time. Its argued that the traditional methods for measuring shareholder returns are flawed and should not be used for this purpose. The traditional methods is to use accounting profit, or some other ratio that is based on accounting profit, such as shareholders' funds or earnings per share.

There are mainly 4 problems with this traditional method;

- Profit is measured over a relevantly short period of time, thus being concerned about shareholders' maximisation of returns, we talk about the long-run. Using profit pose the risk that managers will take decisions that improve performance in the short run, having adverse effects later in time.

- Risk is ignored, meaning that in order to have superior returns, thus profit, a manager needs to take serious risk. Having increased profits may not create shareholder value if the achieved profit is not in line with the increase in the level of risk.

- Accounting profit doesn't take into account all of the costs of the capital invested by the business. Meaning that if a business doesn't cover all of its costs of all capital invested in arriving at the profit for the period, the business is operating at a loss and thus reducing shareholder value. This occurs since measuring profit is made by deducting interest charges in arriving at the profit for the period, but nothing alike is made for the cost of shareholder funds.

- Accounting profit reported by a business can vary in accordance to the particular accounting policies that have been implemented. Meaning, since there are different ways of measuring