CHAPTER - II
FRAMEWORK FOR THE ANALYSIS AND APPRAISAL OF
PROFITABILITY OF A COMPANY

Profitability is defined as the ability of a given investment to earn a return from its use. This is also referred to as earning power or operating performance of funds committed to the assets i.e. investment. Thus an inefficient firm which makes large profits on account of fortuitous circumstances such as sudden price rise or stockpiling programme in the wake of a war cannot in the strict sense of the term be considered as profitable. On the other hand, an efficient undertaking which suffers loss accidentally say due to an earthquake may, still, be considered profitable. Since it is very difficult to abide by such an abstract definition in practice, therefore, it would be better to say the profitability refers to a situation where the value of output exceeds the cost of input no matter whether such a situation

is normal or only accidental. From the very definition of the term profitability its difference with profit becomes apparent.

Considered thus it is possible to identify three different types of profitability, namely:

(i) Accounting Profitability,
(ii) Social Profitability,
(iii) Value added Profitability.

In accounting profitability income as output is compared against the capital employed which is known as return on investment or return on capital employed. This ROI or ROC has two components in it:

\[
\text{ROI or ROC} = \frac{\text{Operating Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}}
\]

\[
= \frac{\text{Operating Profit}}{\text{Capital Employed}}
\]

The higher the ROI or ROC presumably the greater is the efficiency in the management of the firm.

Social profitability as a concept concerns itself in assessing the impact of doing business in terms of social gains or benefits. As for example, out of social consideration in the developed and developing countries, the corporate

undertakings are now required to adopt measures for pollution control. This has a cost and as such reduces profit, but as it is a must and contributes towards the maintenance and improvement of public health, it contributes positively to social profitability. Increasingly in the reporting practices of the corporate undertakings social profitability reporting is gaining ground and there has been humble beginning in India also.

Value added profitability is the excess of sales over the cost of purchase in goods and services. Under this method it is assumed that no productive unit can create products without taking help from its previous producers starting from the gift of nature in a chain. Productive units use as raw materials either natural goods as such or goods obtained from other producers with the help of labour applied on them with the agency of instruments produce new goods of higher values. Thus, each enterprise adds value to existing values in the shape of goods and services receipt from units. It is important to note that an enterprise may exist without making profit but it cannot survive without adding value.

The enterprises where social consideration predominates cannot make profit, the rationale for existence of

such enterprises are now sought in the measurement of their income in terms of value added as their contribution to the society.

In the present exercise, however, we are concerned with the accounting concept of profitability. In accounting, profit is derived by the successive subtraction of many and varied items of expenses from the gross inflow of revenue in a firm. Profit analysis upgrades itself to profitability analysis, when the same is considered with data pertaining to profit as numerator and capital employed as the denominator. The result normally being expressed in the form of a percentage.

Measures of Accounting

Profitability:

Accounting profitability of an operating enterprise is usually measured, with the help of a group financial ratios called 'profitability ratios'. When projected in the form of a Chart the same may be expressed:

<table>
<thead>
<tr>
<th>Profitability Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relating to Sales</td>
</tr>
<tr>
<td>1. Gross Profit Margin to Sales</td>
</tr>
<tr>
<td>2. Net Profit Margin to Sales</td>
</tr>
<tr>
<td>3. Total Operational Expenses to Sales</td>
</tr>
</tbody>
</table>
Thus, it will be observed from the above chart that the profitability analysis may be either on the basis of sales or on the basis of investment or both. If profitability is analysed in relation to sales, then the relevant ratios become (1) Gross Profit Margin to Sales, (2) Net Profit Margin to Sales, (3) Total Operational Expenses to Sales, Ratio. In case the same is measured in relation to investment, then the relevant ratios would be (1) Return on Assets, (2) Return on Capital Employed and (3) Return on Shareholders Equity. An interesting point to note in this connection is that these ratios differ among themselves both in respect of the definition of the profit and the denominator used. For example, the profit before financial charges on capital employed has an end greater economic significance than profit after financial charges. Before going further and evaluating the performance of the five selected undertakings for the present study in terms of profitability, a brief reference is made here about the process of ascertaining these ratios and the problems that are associated with these ratios.

Ratios relating to sales as already stated are:
(a) Gross Profit Margin to Sales (b) Net Profit to Sales and (c) Total Operational Expenses to Sales.

**Gross Profit Margin to Sales**

Gross profit margin is calculated by dividing gross profit by sales. Thus,
Gross Profit Margin = \( \frac{\text{Gross Profit}}{\text{Sales}} \times 100 \)

Since gross profit is equal to sales minus cost of goods sold, the gross margin can also be calculated as follows:

\[
\text{Gross Margin} = \frac{\text{Sales} - \text{Cost of Goods Sold}}{\text{Sales}} \times 100
\]

The former measures profits in relation to sales, while the latter reveals the relationship between cost of production and sale price.

Gross profit being the results of the relationship between prices, sales volume and costs, a change in the gross margin can be brought about by changes in any of these factors. The gross margin represents the limit beyond which the sales price should not be allowed to fall.

A high ratio of gross profits to sales is a sign of good management as it implies that the cost of production of the firm is relatively lower than the sale price. It may also be indicative of a higher sales price without a corresponding increase in the cost of goods sold. It is also likely that cost of sales might have declined without a corresponding decline in sales price. Since a very high and rising gross margin may also be the result of an unsatisfactory basis of valuation of stock, i.e. over valuation of closing stock and/or under valuation of opening stock, a thorough investigation of the factors having a bearing on the
high gross margin is called for in a situation of sudden continued rise in gross margin.

A relatively low gross margin is definitely a danger signal, warranting a careful and detailed analysis of the factors responsible for it. The important contributory factors may be (i) a high cost of production reflecting acquisition of raw materials and other inputs on unfavourable terms, inefficient utilisation of current as well as fixed assets and soon; and (ii) a low selling price resulting from severe competition, inferior quality of the product, lack of demand etc.

A firm is to have a reasonable gross margin for ensuring adequate coverage for operating expenses of the firm and leaving sufficient return for the owners of the business, which is reflected in the net profit margin.

**Net Profit Margin to Sales**

This ratio measures the relationship between profits and sales of a firm. This ratio can be computed in three ways:

Profit Margin: \[
\frac{\text{Net Profit After Taxes Before Interest}}{\text{Sales}} \times 100
\] or

\[
\frac{\text{Net Profit Before Taxes and Interest}}{\text{Sales}} \times 100
\] or
The net profit margin is indicative of management's ability to operate the business with sufficient success not only to cover from revenues of the period, the cost of merchandise or services, the expenses of operating the business (including depreciation) but also the cost of the borrowed funds, leaving thereafter a margin as a responsible compensation to the owners for providing capital and bearing the risk of the business. The ratio of net profit (after interest and taxes) to sales essentially expresses the cost/price effectiveness of the operation.³

A high profit margin would not only ensure adequate return to the owners but also enables a firm to withstand adverse economic condition when selling price is declining, cost of production is rising and demand for the product is falling.

A low profit margin has the opposite implications. However a firm with a low profit margin, can earn a high rate of return on investment if it has a higher inventory turnover. The profit margin should, therefore, be evaluated in relation to the turnover ratio. In other words, the overall rate of return is the product of the net profit margin and the turnover ratio. Similarly when assessing the profitability, the gross profit margin and the net profit margin should be evaluated jointly.

---

The need for joint analysis arises because the two ratios may show different trends.

**Total Operational Expenses to Sales Ratio:**

There are three different approaches for ascertaining the denominator of the ratio viz, (i) total expenses comprising cost of goods sold, selling, general distribution expenses and so on, (ii) cost of goods sold, (iii) specific operating expenses. Thus the ratio may be expressed as under:

1. Operating Ratio\(^+\) = \frac{\text{Cost of goods sold} + \text{Other operating expenses}}{\text{Sales}}

2. Cost of goods sold Ratio = \frac{\text{Cost of goods sold}}{\text{Sales}}

3. Specific expenses ratio = \frac{\text{Specific operating expenses}}{\text{Sales}}

The expenses ratio in a way is reciprocal of the profit margin, gross as well as net. As such deduction of profit margin from 100% indicates the expense ratio. Alternatively, profit margin may be obtained by subtracting the expense ratio from 100%.

\(^+\) The operating ratios referred to here is different from operating expenses ratio which is calculated by dividing the operational expenses excluding cost of goods sold by sales.
The cost of goods sold ratio shows what percentage share of sales is consumed by cost of goods sold. Conversely, what proportion is available for meeting expenses other than the cost of goods sold. The expense ratio is therefore, very important for analysing the profitability of a firm, with reference to the industry average as well as of a firm of similar type. A low ratio is considered favourable while a high one unfavourable. The implication of a high expenses ratio is that only a relatively small percentage share of sales is available for meeting financial liabilities like interest, tax and dividends, etc. Analysis of the factors responsible for a low ratio reveal changes in the selling price or the operating expenses. It is not unlikely that individual items may behave differently. While some operating expenses may show a rising trend, other may record a fall. The specific expense ratio for each of the items of operating cost in the circumstances is to be ascertained to explain the changes in the expense ratio.

Presented in the form of a flow chart, the dimension of this analysis will be:
Operating Ratio

Factory Cost of Sales Ratio

Prime Cost to Sales Ratio

Raw Materials to Sales Ratio

Direct Labour to Sales Ratio

Direct Expenses to Sales Ratio

Indirect materials to Sales Ratio

Indirect Labour to Sales Ratio

Depreciation to Sales Ratio

Rent Sales Ratio

Non-manufacturing Expenses to Sales Ratios

Marketing Expenses to Sales Ratio

Administrative expenses to Sales Ratio

Finance Expenses to Sales Ratio
The expense ratios have their advantages; that these are simple to compute and easy to understand which speaks strongly in favour of the use of these ratios as tools for financial analysis. This is ever not to suggest that expense ratios are above all criticism. In fact, while using these ratios for analysing the performance of a firm in terms of profitability it must be borne in mind that these ratios do not distinguish between fixed expenses and variable expenses. In other words they ignore the behaviour of expenses and information which is highly useful in profit planning and control. Further, when sales is used as the base for the ratio, the usefulness of the ratio is open to question particularly when there is volatility in sales figure.

**Profitability Ratio Relating to Investment**

Profitability of a firm is also appraised by relating its profit to its investments which is in common parlance is known as return on investment (ROI). The term investment, the denominator for the ratio has three different concepts, viz, (1) total assets; (2) capital employed and (3) shareholders equity. Accordingly, there are three broad categories of ROI, viz, (a) Return on Asset, (b) Return on Capital Employed, and
(c) Return on Shareholders' Equity: While the first two indicate the overall efficiency in the management of total financial resources of a firm, the third one tries to measure the efficiency only in respect of the use of funds contributed by the owners. As such, the objective of the ratio, viz., return on shareholder's equity is much narrow.

Return on Assets:

Return on asset as a profitability ratio is measured in terms of the relationship between net profit on the one hand and total investment in assets on the other. The return on assets may also be called as profit to asset ratio. There are various possible approaches to define net profit, the numerator and 'assets', the denominator in the ratio depending upon the purpose and intent of calculations.

Net profit, for the ratio as already stated, may be (i) net profit after taxes, (ii) net profit after taxes plus interest; and (iii) net profit after taxes plus interest minus tax savings. Similarly, the term assets may be (i) total assets; (ii) fixed assets; (iii) tangible assets. Needless to mention in each case the amount as numerator and denominator will be different.

The different variants of the return on assets may therefore be:
(i) \[ \text{ROA} = \frac{\text{Net Profit After Taxes}}{\text{Total Assets}} \]

The ROA ascertained as above would be an under estimate as the interest paid to the creditors is excluded from the net profits. The real return on the total assets is the net operating earnings including interest, since assets that are used in the business are acquired not only out of ownership funds but also out of borrowings. In the situation, return on assets as an index of performance may be arrived at by the application of ratios calculated under any one of the following methods:

(a) \[ \text{ROA} = \frac{\text{Net Profit After Taxes Plus Interest}}{\text{Total Assets}} \]

(b) \[ \text{ROA} = \frac{\text{Net Profit After Taxes Plus Interest Minus Tax Savings}}{\text{Total Assets}} \]

(c) \[ \text{ROA} = \frac{\text{Net Profit After Taxes + Interest}}{\text{Tangible Assets}} \]

(d) \[ \text{ROA} = \frac{\text{Net Profit After Taxes + Interest}}{\text{Fixed Assets}} \]

Even when we take net profit subject to adjustments as indicated in the ROA from 'a' to 'd' the resultant ratio may fail to be true index of profitability because of the various problems associated with the denominator of this ratio 'total assets'. Traditionally assets are taken for the purpose of this ratio at original cost less depreciation, but the asset values arrived
under the process may remain incorrect if original price is inflated more than the market value at the time of purchase\textsuperscript{4}. Similarly, asset value will be distorted if expenses for the ordinary maintenance are added to the asset value or ignored where such a repairs and renewals increased the effective life of the asset. Similarly, asset value will be incorrect if there is under provision in respect of depreciation.

Another problem that may render the denominator of the ratio, ROA, inaccurate is the possibility of higher value or lower being ascribed for the intangibles such as goodwill, patents, copyrights etc. where total asset values include the intangible\textsuperscript{5}. Similarly, if 'nominal assets' are allowed to form a part of the intangibles, ROA will not be correct one. The problems listed above, needless to mention, are in addition to the problems in respect of valuation of current assets. Moreover, ROA, as an index of profitability, is considered to be a poor index since it cannot throw any light on the profitability of the different sources of funds out of which the total assets are acquired. A better index is, therefore, suggested to be Return on Capital Employed (ROCE).

\textsuperscript{5} Hany G. Guthman - Ibid., p.131.
Return on Capital Employed (ROCE):

The return on capital employed is similar to the return on asset except in one respect. Here the profits are related to the capital employed. The term capital employed refers to long term funds supplied by the creditors and owners of the firm. It can be computed in two ways. First, it is equal to non-current liabilities plus owner's equity. Alternatively, it is equivalent to net working capital plus fixed assets. Thus, the capital employed basis provides a test of profitability related to the sources of long-term funds. A comparison of this ratio with similar firm with the industry average and overtime would provide sufficient insight into how efficiently the long-term funds of owners and creditors are being used. The higher the ratio, the more efficient is the use of the capital employed.

The return on capital employed can be computed in different ways, using different concepts of profit and capital employed. Thus, it may be:

(i) \[
\text{ROCE} = \frac{\text{Net Profit After Taxes}}{\text{Total Capital Employed}}
\]

(ii) \[
\text{ROCE} = \frac{\text{Net Profit After Taxes} + \text{Interest} + \text{Depreciation}}{\text{Total Capital Employed}}
\]

(iii) \[
\text{ROCE} = \frac{\text{Net Profit After Taxes} + \text{Interest}}{\text{Total Capital Employed} - \text{Intangible Assets}}
\]
Depreciation is added back to net profit along with interest for getting away from the elements of discretion and volatility associated with depreciation policies which may impede fair comparisons of profitability between competing firms or in respect of the same firm, between successive accounting periods during an era of rapid price changes. Further, if depreciation is deducted from the numerator, the cumulative figure of depreciation should be deducted from the denominator also that is, net fixed assets, instead of gross fixed assets, should be added to current assets for determining the total level of investment serving as base for the ascertainment of ROCE ratio.  

ROCE is also not foolproof index of profitability because of several inadequacies with the same. One of them is that, by manipulating the period of time on which the computation is made, the ratio itself can be manipulated. Production and profit, for instance, may be maximised during the short period by the neglect of proper maintenance standard. Secondly, if capital employed is calculated with reference to the asset side of the Balance Sheet, the problems that may the ROA ratio as an index of profitability become applicable to ROCE ratio also. Excellence of the ratio therefore lies when the same is ascertained with reference to the liability side of the Balance Sheet i.e.

external and internal equities:

Return on Shareholders' Equity:

This profitability ratio shows the relationship between return and the sources of funds as a step further. While the ROCE expresses the profitability of a firm in relation to the funds supplied by the internal and external equities as a whole, the return on shareholder's equity measures the return on funds contributed by the owners i.e. shareholders.

The shareholders of a firm fall into two categories, viz, Preference Shareholders and equity shareholders depending upon their respective rights and privileges. The profitability ratios based on shareholder's equity are termed as return on shareholders' equity. Several measures are in use to calculate the return to shareholders viz, (1) Rate of Return on (a) total shareholders equity (b) equity of ordinary shareholder (2) Earnings Per Share (3) Dividend Per Share (4) Dividend Payment Ratio (5) Dividend and Earning Yield (6) Price Earnings Ratio (7) Earnings Price Ratio.

Return on Total Shareholders' Equity:

According to this ratio, profitability is measured by dividing the net profit after taxes (but before dividend) by
the total shareholders' equity. The term shareholder's equity includes (i) preference share capital (ii) ordinary shareholders equity consisting of equity share capital, share premium, reserves and surplus less accumulated losses. For the purpose of ascertaining this ratio both preference and equity shares are taken at their book values. Where these shares are partly paid only the amount actually paid up would be taken into account. Some are in favour of excluding share premium in the calculation of denominator of the ratio even though it forms a part of the original investments by equity shareholders. The shareholder's equity is also sometimes referred to as net worth. Thus,

\[
\text{Return on total shareholders' equity} = \frac{\text{Net profit after taxes}}{\text{Total shareholders' equity}}
\]

This ratio reveals how profitably the owner's funds are being utilised by the firm. A comparison of this ratio with that of similar firms as also with the industry average throws light on the relative performance and strength of the firm.

Return on Ordinary Shareholders' Equity:

While there is no doubt that the preference shareholders are also owners of a firm, the real owners are the

ordinary shareholders who bear all the risks, participate in management and are entitled to all the profits remaining after all outside claims including preference dividend are met in full. The profitability of a firm from the owners' point of view should therefore, in the fitness of things be assessed in terms of the return to the ordinary shareholders. The ratio under reference serves this purpose. This ratio has also another nomenclature namely, productivity of equity block.

It is calculated by dividing the profits after taxes and preference dividend by the equity of ordinary shareholders. Thus,

\[
\text{Return on Shareholder's Equity} = \frac{\text{Net Profit after Taxes and Preference Dividends}}{\text{Ordinary Shareholders' Equity}}
\]

The principles for ascertaining the denominator of this ratio is the sum total paid up value of the equity/ordinary shares. It would be recalled that the objective of financial management is to maximise the return to the owners. The rate of return on ordinary shareholders' equity is therefore of crucial significance in ratio analysis from the point of the owners of the firm.

Earnings Per Share (EPS) ;

Apart from the rates of return, the profitability of a firm from the point of view of the ordinary shareholders

can also be assessed with reference to the Earnings per Share. It measures the profit available to the equity shareholders on a par share basis, i.e. the amount that they can get on every share held. It is considered a better index than return on equity shareholders' stated earlier as it helps avoiding the complications that arise in the calculation of funds contributed by the equity shareholders.9

It is calculated by dividing the profits available to the shareholders by the number of the outstanding shares. The profits available to the ordinary shareholders are represented by net profits after taxes and preference dividends. Thus,

\[ \text{EPS} = \frac{\text{Net Profit available to the Equity holders}}{\text{Number of Ordinary Shares Outstanding}} \]

It is a widely used ratio. Yet, as a measure of profitability of a firm, from the owners' point of view, it should be used with care and caution as it ignores the effect of increase in equity capital as a result of retention of profit. If the EPS increases over the years, it does not necessarily suggest any improvement in firm's profitability. The increased profits to the owners may be the outcome of an enlarged equity capital as a result of retention of profit, as the retention has no effect on the number of ordinary shares.

**Dividend Per Share (DPS):**

The Earnings Per Share (EPS) measures what the owners are theoretically entitled to receive from the firm. In reality however, a part of net profits available for distribution may be retained in the business and the balance paid to equity holders as dividends. The dividends paid to the equity shareholders on a per share basis is the Dividend Per Share (DPS). In otherwords, DPS is the net distributed profit belonging to the equity shareholders divided by the number of equity shares outstanding. That is,

\[
DPS = \frac{\text{Net profits after interest, taxes, preference dividend paid to equity shareholders}}{\text{Number of Equity Shares Outstanding}}
\]

No adjustment is made for retention for ascertaining the maximum amount that could be distributed as dividend of each equity share.

The DPS is a better indicator than EPS because it shows what exactly can be received by the owners. Like the EPS, the DPS also cannot be infallible guide of profitability as the equity base might have increased due to increased retention without causing any change in the number of outstanding shares.

**Dividend Payout Ratio:**

It is also known as pay out ratio. It measures the relationship between the earnings belonging to the ordinary shareholders and the dividend paid to them. In otherwords, the D/P
ratio indicates what percentage share of the net profits after taxes and preference dividend is used to pay dividend to the equity holders. It can be calculated by dividing the total dividend paid to the owners by the total profits earnings available to them. Alternatively, it can be ascertained by dividing the DPS by the EPS multiplied by 100, Thus,

\[ \text{DP Ratio} = \frac{\text{Total dividend to equity holders (cash dividend)}}{\text{Total net profits belonging to equity holders}} \times 100 \]

or

\[ \text{DP} = \frac{\text{Dividend per equity share (DPS)}}{\text{Earnings per share (EPS)}} \times 100 \]

when DP ratio is subtracted from 100, it gives the percentage share of the net profits that are retained in the business. The extent the pay out ratio is less than 100% can be interpreted as a measure of conservatism practised by the relevant company in framing its dividend policy. Conservative dividend policy has the hazard that instead of strengthening a company, may cause in certain circumstances an unfavourable change in the market policy of funds:

**Earnings and Dividend Yield**

Another profitability ratio from the point of view of the ordinary shareholders is the earnings and dividend yield. This ratio is expressed in terms of the market value per share. The earnings yield may be defined as the ratio of earnings per share to the market value per ordinary share. Similarly, the dividend yield
is calculated by dividing the cash dividends per share by the market value per share. That is,

\[(1) \text{Earning Yield} = \frac{\text{EPS}}{\text{Market value per share}}\]

The term earnings for the purpose of this ratio implies net profit after payment of interest on debt, taxes on income and dividend on preference capital.

\[(2) \text{Dividend Yield} = \frac{\text{DPS}}{\text{Market value per share}}\]

The market price of equity share, is capable of several interpretations. It may mean the closing quotation on the last day of the accounting period, or, it may stand for the price at which the last transaction has taken place prior to the point of time when computation is being done. But it is believed that it would be more meaningful to work out an average of the price prevailing over the accounting period instead of going for any one of the above two methods. A crude method of calculating this average may be to add up the opening price and the closing price and then to divide the aggregate of figures by two. Alternatively, an average of the highest and the lowest quotations (on a particular day/during the entire accounting period) may be computed.

**Price Earnings Ratio (P/E)**

Price Earnings Ratio is closely related to the earnings yield/earnings price ratio. It is actually the reciprocal of the
latter. This ratio is computed by dividing the market price of the share by the EPS. Thus,

\[ \text{P/E Ratio} = \frac{\text{Market Price of a Share}}{\text{EPS}} \]

The P/E ratio indicates the price currently being paid by the market for each rupee of currently reported EPS. In other words, the P/E ratio measures the investor expectations and the market appraisal of the performance of a firm. In estimating the earnings, only normally sustainable earnings associated with assets are taken into consideration. In other words, the earnings are adjusted for income, say discontinued operations and extraordinary items as well as many other items that do not repeat every year. The accepted principle is the higher the P/E ratio, the better it is for the shareholders who are owners of the business. This ratio is very popular with the security analysts who use the same for assessing a firm's performance as expected by the investors.