I. Overview of Financial Statement Analysis

** One of the original goals of contemporary financial management practice within health services organizations involves the evaluation of organizational financial/operational performance/effectiveness vis-à-vis the organization’s stated financial/operational objectives.

** The systematic analysis of information provided by the organization income statement, balance sheet, and cash flow statement can provide useful information for this purpose. In conjunction with the systematic analysis of operational information, the identification of potential root cause(s) of organizational performance (or lack thereof) is possible.

** The most commonly employed method of utilizing data/information from the income statement, balance sheet, and cash flow statement to analyze organizational financial performance is financial ratio analysis.

II. Financial Ratio Analysis

** The most commonly utilized financial ratios are as follows:

** Profitability ratios: various measures used to estimate the overall profitability of the organizational enterprise.

** Total margin/profit margin: total margin on all sources of revenue. (increased margin, increased profitability)

\[
\frac{\text{Net Income (Net Assets)}}{\text{Total Revenue}}
\]

** Operating margin: total margin on all sources of operating revenue. (exclude non-operating sources of revenue)

\[
\frac{\text{(Net income – Investment Income)}}{\text{Operating Revenue}}
\]

** Return on assets (ROA): total return on organizational assets. (measures asset productivity)

\[
\frac{\text{Net Income}}{\text{Total Assets}}
\]

(increased ROA, increased asset productivity, increased profitability)
** Return on equity (ROE): total return on shareholder/owner equity capital.

\[
\text{Net Income} \quad \text{Net Income (increased ROE, increased Total Equity profitability)}
\]

** The version of net income that is reported in the numerator of these ratios will vary between different types of organizations – for-profit organizations that pay taxes will report either net income before taxes and interest (plus depreciation) or net income after taxes and interest (plus depreciation). In either case, it is necessary to add depreciation expense back as a non-cash expense to estimate actual profitability net of depreciation.

** Not for profit organizations that are tax exempt will typically report net revenue after interest expense plus depreciation, and NFP profitability ratios will be estimated based on this figure.

** In general, all profitability ratios may be utilized to measure organizational profitability with respect to revenue generated, assets utilized, or equity invested in the organizational enterprise.

** ROA is a more omnibus measure of organizational profitability and is applicable to estimating profitability for both investor-owned as well as NFP organizations. As ROA increases, this indicates an increased profitability derived from organizational assets and/or may be indicative of an increased use of financial leverage to finance organizational assets. (increased debt resulting in increased interest expense, reduced NIBT, reduced tax liability, increased NI).

** Investor-owned organizations tend to focus more heavily on ROE as a direct measure of organizational profitability, as this measure focuses solely on the return to shareholder equity capital, most important to organizational shareholders.

** The relationship between ROA to ROE as measures of organizational profitability is summarized in a ratio known as the DuPont analysis.
DuPont analysis as a form of profitability estimate allows for a determination of the source(s) of increased/decreased ROA/ROE for an organization.

ROE = ROA x Equity Multiplier

\[
\text{Net Income} = \frac{\text{Net Income}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Total Equity}}
\]

In this formulation, the first term on the right hand side of the equation represents the asset productivity term, and the second term represents the equity multiplier, which estimates the proportion of assets funded by equity capital as opposed to debt. The more highly leveraged an organization, the greater the ROE will be and the greater the equity multiplier will be for a given ROA. Such types of growth in ROE represents growth through the use of leverage as opposed to growth related to asset productivity.

**Liquidity ratios:** various measures used to estimate the general liquidity (in terms of available cash on hand) of the organization to meet its current/short-term obligations. These ratios are of primary importance to organizational vendors and creditors to whom such obligations are due from the organization.

**Current ratio:** ratio of organizational current assets to current liabilities. An increased current ratio is generally indicative, in most cases, of a sufficient level of liquidity within the organization.

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

**Quick ratio:** also known as the acid test, represents the ratio of organizational current assets minus inventory and prepaid items divided by current liabilities. This ratio explicitly recognizes that inventory and prepaid items are relatively illiquid forms of assets; thus, this ratio only counts cash, cash equivalents, and accounts receivables as liquid assets for purposes of calculation.

\[
\text{Quick ratio (Acid test)} = \frac{\text{Current Assets} - \text{Inventory} - \text{Prepays}}{\text{Current Liabilities}}
\]
** Days of cash on hand: represents the average number of days of cash available to meet current obligations.

\[
\text{Days of Cash On Hand} = \frac{\text{Cash + Marketable Securities}}{(\text{Expenses – Depreciation –Non-collections})/365}
\]

** These various measures of liquidity do not usually, in and of themselves, provide enough information to make definitive judgments regarding an organization’s overall liquidity position. It is usually necessary to analyze the organization’s cash flow statement and/or cash budget to make more definitive statements in terms of the possible causes of liquidity problems.

** Debt management ratios: ratios that measure how and to what extent an organization utilizes debt as a source of financing to support its operations and capital acquisition.

** For the investor-owned organization, an increase in the use of debt financing reduces the amount of equity financing required for a given scale of operations and a given level of capital assets. As was seen with DuPont analysis, an increased use of debt also allowed the investor-owned organization to “leverage” up its ROE by increasing the equity multiplier accordingly.

** For the not-for-profit organization, an increase in the use of debt financing necessarily results in an increased scale of operations through enhanced operating capacity and increased acquisition of capital assets.

** The main caveat to the otherwise favorable treatment of debt sources of financing is that an organization, whether investor-owned or not-for-profit, can become so heavily burdened with debt obligations that it eventually has trouble servicing its debt – i.e. meeting its current obligations as it relates to the repayment of debt principle and interest. The Enron case is a perfect example of the over-leveraged organization. As such, increased debt obligations raises the risk of organizational default.

** The two main categories of debt management ratios that are utilized for the purpose of evaluating the organization’s ability to manage its debt obligations are (1) capitalization ratios and (2) coverage ratios.
**Capitalization ratios:** estimates the extent to which debt has been used to acquire capital assets.

**Total debt to total assets** – an increase in this ratio is indicative of increased organizational use of leverage/debt and increased risk of default.

**Total debt to total equity** – an increase in this ratio is indicative of increased organizational use of leverage/debt and increased risk of default.

**Coverage ratios:** generally estimate the ability of the organization to pay the cost of utilizing debt financing.

**Times interest earned (TIE) ratio** – equivalent to the ratio of net income before taxes and interest divided by total interest expense for the investor-owned organization, and net income plus interest expense divided by interest expense for the not-for-profit organization. An increase in TIE ratio is indicative of an enhanced ability to pay the cost of debt financing and a reduced risk of default.

**Cash flow coverage (CFC) ratio** – measure of debt serviceability based on organizational cash flow. An increase in CFC ratio is indicative of a reduced risk of default and reduced use of debt/leverage. The ratio is estimated as follows:

\[
\text{CFC} = \frac{\text{Net Income before taxes and interest} + \text{lease payments} + \text{depreciation}}{(\text{Interest} + \text{lease payments} + \text{principal})/(1-T)}
\]

**T = tax rate**

**Asset Management Ratios:** estimate the extent to which the organization is using its assets effectively. The goal of organizational asset management is to optimize the productivity of such assets for the purpose of maximizing the return to assets as well as equity capital.

**Fixed asset turnover ratio:** total revenue of the organization divided by the net fixed assets employed by the organization. In this example, net fixed assets are estimated as the difference between total fixed assets and accumulated depreciation on those assets.
**Total asset turnover ratio**: total revenue of the organization divided by total assets (current plus fixed) without any crediting for accumulated depreciation.

**Current asset turnover ratio**: total revenue of the organization divided by total current assets employed by the organization.

**Net days in accounts receivable**: estimated based on the following:

\[ \text{Net Accounts Receivable} \]
\[ \text{NDAR} = \frac{\text{Net Patient Service Revenue}}{365} \]

**In addition to the above examples of financial ratio analysis, a number of other methods of analysis is increasingly utilized for the purpose of evaluating the performance of the organization vis-à-vis its stated operating and financial objectives.**

**To allow for more valid comparisons between the organization and other similar types of organizations (benchmark vs. peer group comparisons for example), common size analysis is commonly employed whereby an organization’s financial statement information is weighted according to the size/scale of the organization’s operations. For income statement entries under common size analysis, all entries are divided by total revenues. For balance sheet entries, all entries are divided by total assets. All subsequently estimated financial ratios such be directly comparable against peer group as well as benchmark.**

**For purposes of evaluating/tracking organizational performance and changes in performance over time, two commonly utilized methods of analysis are trend analysis and % change analysis.** For trend analysis, estimated measures/ratios of financial and/or operating performance are followed over time and statistically significant trends identified by one of several modeling techniques (regression, time series). For % change analysis, all changes in financial/operating data over time are converted to % change for purposes of trend analysis.

**Two other methods of analyzing the financial and operating performance of the organizational enterprise are market value added analysis (MVA) and economic value added (EVA) analysis.**
Both analytical approaches attempt to estimate the overall economic value that the organization provides relative to the resources it consumes as part of the production process.

** MVA analysis: measures/estimates the total market value added by the investor-owned organization, net of the organizational shareholders’ original equity contribution.

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MVA = \text{Market value of shareholders’ equity stake} - \text{Book value of shareholders’ equity stake}
\]

** In this example, market value of shareholder equity is estimated by multiplying the number of outstanding shares of organizational equity by the market price per share. Book value is typically estimated as the book or par value assigned to each share of organizational equity.

** EVA analysis: measures/estimates the “true” economic value of an organization (investor-owned or NFP) by comparing the organization’s operating profit/net revenue against its implied/real cost of capital, which takes into account the opportunity cost of capital employed by the organization.

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EVA = \text{(Net Profit/Revenue} – \text{Interest Expense}) – \text{(Total assets x cost of capital)}
\]

** In this example, net profit or net revenue is derived from the income statement, interest expense is also derived from the income statement, total assets is derived from the balance sheet, and organizational cost of capital can be estimated (more later) or given based on the organization and the overall level of risk inherent in such enterprises.

III. Operational Analysis

** Most often, operational forms of analysis are done to complement the various forms of financial analysis discussed above. In particular, analysis of various operational indicators is helpful in identifying specific (and potentially modifiable) causes/determinants of financial performance identified as part of the financial analysis process.
Examples of operational indicators:

**Net price per discharge = \( \frac{\text{Net inpatient revenue}}{\text{Total discharges}} \)**

Comparison of this operational indicator with peer group or benchmark information gives the HSO an idea of roughly how price competitive it is compared to other HSOs. Comparison with organizational case mix index (CMI) should give a better idea of price competitiveness.

**Payer discharge percentage = \( \frac{\text{Total payer discharges}}{\text{Total discharges}} \)**

**Service revenue percentage = \( \frac{\text{Net service revenue}}{\text{Net patient revenue (total)}} \)**

Comparison of both operating indicators listed above with peer group and/or benchmark organizations should provide an estimate of an organization’s comparative exposure to specific payers and/or specific service lines. The greater the exposure an organization has to either/both, the greater the financial risk entailed.

**Occupancy rate/percentage = \( \frac{\text{Total inpatient days (per year)}}{\text{Number of staffed beds} \times 365} \)**

**Average length of stay (ALOS) = \( \frac{\text{Total inpatient days (per year)}}{\text{Total discharges}} \)**

Comparison of the above operating indicators provides a rough estimate of the intensity of resource utilization within the inpatient setting. When combined with an analysis of case mix, allows for a rough assessment of operating efficiency as well.

**Cost per discharge = \( \frac{\text{Total inpatient operating expenses}}{\text{Total discharges}} \)**

Comparison of this indicator with peer group and/or benchmark organizations also allows for an assessment of organizational efficiency and competitive position. Analyzed along with payment per discharge and case mix index, allows for a comparative estimate of organizational profitability and performance.