Appendix 2

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H. Rami: Financial statements with analysis

Companies must prepare financial statements at the end of a reporting period (usually a calendar year). Typically, these include the balance sheet, the income statement, and the notes (the latter provide additional information on the company's commitments). The cash flow statement provides an analysis of a company's ability to generate enough cash through and for its operations. Other analyses allow to better understand the company's situation.

Balance Sheet

The balance sheet presents the financial situation at a point in time (end of the reporting period). It often includes a comparison with the previous period. The balance sheet is comprised of assets on one side and liabilities and shareholders' equity on the other side. The balance sheet shows which assets the firm holds and who owns them.

Assets are resources owned by the company as a result of past events or transactions and from which future economic benefits are expected to flow to the company[1]. Assets are used for operational activities including all tangible and intangible resources, e.g., buildings, machines, inventory, and also financial positions such as accounts receivable. The company's capital has been used to acquire these assets, so their total value is equal to the capital (or money) invested in the company.

Liabilities and shareholder equity are the two main sources of that money invested. Liabilities are debts and obligations arising from past events or all the money the company owes to third parties, such as suppliers, governments, employees, banks, etc. Shareholder equity includes the share capital invested by owners and all profits or earnings that have not been distributed to the shareholders but have rather been retained as reserves, including the profit from the current closing accounting period.

The total value of assets and liabilities and shareholders' equity are equal or balanced, hence the term balance sheet.

Simplified Balance Sheet

Assets	**Liabilities and Shareholders' Equity**

Fixed Assets
• Tangible assets (E)
  o buildings
  o equipment
• Intangible and financial assets
	Liabilities
	• Loans and overdrafts
	• Shareholders' advances (B)
	• Accounts payable
	• Taxes and social charges Deferred revenue

Current assets • Inventory • Other current assets • Accounts receivable • Cash	*Shareholders' equity* Share capital (A) • Reserves (D) • Net income (C)
Prepaid assets	*Provisions (F)*
TOTAL ASSETS	**TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY**

A. Funds provided by company's owners (shareholders), i.e., the money raised from selling stock or the paid-in capital
B. Funds provided by the shareholders in addition to the share capital to ensure financial stability and sufficient cash for operations.
C. Net income for the current period may be positive (the company made a profit) or negative (the company made a loss).
D. Profits not distributed to shareholders but retained in the company.
E. Valued at acquisition cost less accumulated depreciation.
F. Funds set aside to pay for anticipated future losses.

Income statement

The income statement (also called profit and loss statement, P&L) presents all *revenues* and *expenses*

[1] / IFRS for SMEs. London: IASB (International Accounting Standards Board). 2015. p. 15, cf. APICS dictionary, 16th ed.

incurred during the reporting period. It shows how revenues (the "top line") were transformed to net income, the financial result (which may be positive; profit, or negative; loss) after accounting for all revenues and expenses. While the balance sheet shows a single point in time (situation at the end of the period), the income statement represents what has happened during a period.

Revenues. When a company sells a product or a service it obtains revenue. Using accrual accounting, revenues are the total invoiced to customers, regardless of whether paid or not (hence the need to manage accounts receivable, customer credit and payment terms). This is often referred to as gross revenue or sales revenue and usually presented as sales minus sales discounts, returns, and allowances.

Operating Expenses are all costs incurred to run the company and carry out its major operating activities. They include all cash outflows or other consumption of assets or incurrence of liabilities (incl. accounts payable) during a period. Expenses should be analyzed by *nature* (material purchases, transport costs, salaries, employee benefits and other labor costs, depreciation, etc.) or by *function* (cost of sales, selling, administrative, etc.)

Non-operating section. This section includes all revenues or gains and expenses or losses that do not stem from the company's primary activities. Other revenues may include rent, patent income or sales of fixed assets (e.g., machines or real estate). Other expenses may be foreign exchange losses. Finance costs or financial expenses are the costs of borrowing money (interest and bank charges). Employee profit sharing is in addition to regular salaries. Income tax includes payables to tax authorities in the current period and the amount of deferred tax liabilities (to be paid later).

Simplified Income Statement

Revenues • (A) Sales • Other income
Operating expenses • (B) Salaries and benefits charges • Purchases • Depreciation expenses and provisions
Operating income (C) = (A) – (B)
Financial expenses (interest) (D)
Net income before income tax and exceptional income and expenses **(E) = (C) – (D)**
Exceptional income and expenses (F)
Employee profit sharing and income taxes (G)
NET INCOME (H) = (E) + (F) – (G)

Example: Financial Analysis of the company H. Rami SARL[2]

To finance its activities, H. Rami utilizes share capital and shareholders' advances as well as external financing. A balance must be found between the resources from shareholders and those from external creditors (to avoid "overindebtedness"). The situation presented to shareholders at the Annual General Meeting following the last period is as follows. During the meeting the shareholders are presented with the financial statements which they must accept or reject as faulty. They must also decide how to use the net income (distribute as dividends or retain as owner's equity) or cover a loss.

Balance Sheet of H. Rami SARL[3]

[2] Abbreviation of "Société à responsabilité limitée", French for limited liability company. Limited liability refers to the fact that the liability accepted by the company to the outside world is limited to its share capital.
[3] This and all following examples show figures in Euro (EUR), unless indicated otherwise.

Assets		Liabilities and Shareholders' Equity	
Fixed Assets		*Liabilities*	
Building and equipment	70 281	Loans	544 026
		Shareholders' advances	57 624
		Accounts payable	95 098
		Income taxes and social charges	110 495
Total fixed assets	**70 281**	***Total liabilities***	**807 243**
Current assets		*Shareholders' equity*	
Raw material inventory	129 802	Share capital	170 000
Work in process	169 886	Reserves (A)	18 451
Finished goods inventory	60 781	Net income (B)	19 345
Accounts receivable	498 066		
Cash	86 223		
Total current assets	**944 758**	***Total shareholders' equity***	**207 796**
TOTAL ASSETS	**1 015 039**	**TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY**	**1 015 039**

Income Statement of H. Rami SARL

Revenue	
Sales	*2 120 487*
Operating expenses	*2 017 804*
Salary costs	956 391
Purchases and subcontracting	919 471
Depreciation expense	36 023
Overhead	105 919
Operating income	**102 683**
Interest	*75 161*
Net income before taxes	**27 522**
Income taxes	*8 177*
NET INCOME	**19 345**

Cash Flow Statement

The cash flow statement (CFS) allows to understand the flow of money (cash and cash equivalents) entering and leaving a company. Many jurisdictions require a CFS as a mandatory financial statement. It is also useful for managing operations from a financial perspective through monthly or quarterly cash flow plans and reviews.

The CFS measures how well a company manages its cash position, meaning how well the company generates cash to pay its debt obligations and fund its operating expenses. Investors can understand how a company's operations are running, where its money is coming from, and how money is spent as well as whether the company is able to meet its obligations or pay dividends.

In its simplest form, a CFS shows the sum of cash inflows (from customers) and cash outflows (for expense purposes). The result is net cash flow (NCF), a running balance can be used to show the available cash period by period. The example shows data for each quarter and the full year.

Cash Flow Statement of H. Rami SARL

All figures in EUR	Quarter 1	Quarter 2	Quarter 3	Quarter 4	FULL YEAR
CASH INFLOW					
CUSTOMER PAYMENTS	970 000	520 000	480 000	296 905	2 266 905
CASH OUTFLOW					
SUPPLIERS	310 500	500 250	245 000	116 839	1172 589
LABOR	239 098	239 098	239 098	131 504	848 798
VALUE ADDED TAX	109 917	18 292	52 500	11 051	191 760
BANK LOAN	43 790	43 790	43 790	43 790	175 160
TOTAL CASH OUTFLOW	**703 305**	**801 430**	**580 388**	**303 184**	**2 388 307**
NET CASH FLOW	**266 695**	**(281 430)**	**(100 388)**	**(6 279)**	**(121 402)**
AVAILABLE CASH					
BEGINNING OF PERIOD	150 000	416 695	135 265	104 877	150 000
SHAREHOLDER DEPOSIT/REFUND			70 000	(12 376)	57 624
END OF PERIOD	**416 695**	**135 265**	**104 877**	**86 222**	**86 222**

The total customer payments (2 266 905 €) can't cover all the necessary cash outflow of the year. As a result, net cash flow is negative, despite a positive net income. This is often referred to as "burning cash". Rami doesn't even generate enough cash to pay back the bank loan as intended. This created a high-risk situation and shareholders had to inject 57 624 € (another cash inflow) to protect the short-term liquidity of the company. Such a situation is clearly not sustainable and bears a high risk of insolvency.

Analysis of Financial Statements for H. Rami[4]

Net Income and Profitability:

Profitability can and must be assessed in absolute and relative terms.

Net income is positive (19 345 €), i.e., H. Rami makes a profit (absolute value). Relative to its sales, however, it only amounts to 0.9 % (a relative measure called return on sales, ROS), the company is barely profitable and at high risk. ROS measures how efficient a company runs its operations by considering how much costs are generated when creating a certain level of sales.

Another way of assessing relative profitability is to compare net income to the amount of money invested in the company, i.e., the relative return of the investments made by the shareholders (called return on investment, ROI). There are different ways to calculate ROI (inclusive or exclusive of certain balance sheet items). In its most simple form, income (profit) is compared to total assets from the balance sheet. For H. Rami this gives 19 345 €/1 015 039 € = 1.9 %.

Operating income (also called earnings before interest and taxes, EBIT) looks at how much money a company generates from its normal, core operations. It doesn't consider items from the non-operating section of the income statement (see above). It is a measure of operational success or effectiveness of the company.

Analyzing operating income is helpful since it doesn't include taxes and other one-off items that might skew profit or net income. A high operating income means that the company is generating more revenue while controlling expenses, productions costs, and overhead. One way to judge operating income is to compare it to other companies in the same industry.

Rami's operating income (operating margin of 4.8 % of sales = 102 683 €/2 120 487 €) is too low for this industry where it is generally considered that this ratio should exceed 15 %.

[4] Due to rounding, some figures are slightly different form the ones presented in the AEF slides. Also, the following analysis uses after-tax figures, i.e., it considers the profit after income taxes (19 345 €). The AEF course uses pre-tax income

Additional Analyses

Salary costs (salaries and social charges) represent 47 % of all operating expenses, showing that H. Rami carries out a labor-intensive activity. By itself, this is neither good nor bad, it must be compared with other companies of similar size in the same industry.

Net income represents 0.96 % of operating expenses and 2.02 % of salary costs. Again, this highlights the low relative profitability of Rami compared to the efforts invested. Increasing salary costs by more than 2% would change H. Rami's net income to a net loss position.

Debt Ratios

The debt ratio (also debt-to-assets ratio) shows how much funds come from sources other than shareholders' equity: Debt ratio = Total liabilities/Total Assets = 807 243 €/1 015 039 € = 79.5 %. I.e., lenders have supplied about 80% of all the company's funds. The debt-to-equity ratio asses risk against equity: Total liabilities/Total Equity = 807 243 €/207 796 € = 3.9. Debts amount to nearly four times the equity. Both ratios clearly indicate a high-risk situation.

The significant level of inventory (the total of raw materials, work in process, and finished goods amounts to more than 360 000 €) does not provide an adequate guarantee fore creditors as it is essentially made up of specific raw materials (various kinds of wood) and work in process, which may not be sellable in the future.

Financial expenses are linked to the debt level. The financial expenses of 75 161 € represent over 3.5 % of sales. Banks pay special attention to this ratio that greatly exceeds the generally accepted level for industrial activity which will not allow the company to obtain any additional type of bank financing (short-term or medium-term loans).

Cash flow from Operations

Cash flow from operations shows how a company can finance its activities from own operating activities. It is equal to net income plus depreciation (55 368 €). Out of this, H. Rami has to reimburse some 175 000 € of its total loans. The self-financing capacity is not sufficient to fulfill this obligation. The gap of about 120 000 € cannot be covered by cash balances (only 86 000 €). If the level of accounts receivable and inventory does not fall, shareholders will have to provide additional funds to avoid receivership. This situation is also evidenced by the negative net cash flow.

Working Capital

Working capital (WC) is the difference between a company's short term (current) assets and liabilities. It represents the amount of money required to finance inventory, work in process, and accounts receivable, considering the amount of credit given by suppliers and authorities. WC is a measure of liquidity and operational efficiency.

For H. Rami WC is: 944 748 € – (95 098 € + 110 495 €) = 739 155 €.

Liquidity. If a company has substantial positive working capital, then it should have the potential to invest and grow. If a company's current assets do not exceed its current liabilities, then it may have trouble growing or paying back creditors, or even go bankrupt.

Efficiency. WC is the financial mirror of operational processes. Excessive working capital a sign of operational inefficiency. To judge this one must compare the working capital with sales. H. Rami's ratio of WC to sales is 34,9%, or WC is equal to 127 days of sales. This is twice the industry average of 50 to 60 days, indicating a very low return on the investment in WC.

This significant amount arises partly from accounts receivable (498 066 €, or 2.8 months of sales) and partially from inventory (360 469 €, or 2 months of sales). H. Rami has to pay suppliers long before customers pay, its cash-to-cash-cycle is too long, resulting in a negative cash flow.

Inventory Turnover Ratio

Inventory turnover ratio (inventory turns) indicates how the company's inventories are used. The faster inventory turnover occurs, the more efficiently a business operates while experiencing a higher return

on its assets. APICS[5] defines inventory turns as "the number of times that an inventory cycles, or turns over, during the year. A frequently used method to compute inventory turnover is to divide the annual cost of sales by the average inventory level."

For H. Rami this is 2 017 804 €/858 535 € = 2.4. This means the inventory turns 2.4 times a year. In other words, the inventory coverage represents about five months of production for H. Rami (12/Inventory turns).

Another calculation method[6] uses cost of goods sold (COGS) instead of operating expenses. COGS consists of all the costs associated with producing goods or providing services. These costs may include variable costs involved in manufacturing (raw materials and labor). They may also include fixed costs (factory overhead, storage costs, and sometimes depreciation expense). COGS does not include general selling expenses (management salaries and advertising expense). For H. Rami this is: 1 875 862 € / 858 535 €; resulting in 2.2 turns or 5.5 months of production in COGS.

DuPont Analysis

One of the oldest and most well-known measurement or financial analysis systems[7] uses financial data to break down the rate of return on capital invested into its main parts in order to understand the source or drivers of superior (or inferior) return on investment (ROI). ROI is seen as a long-term measure of corporate productivity and it reflects the idea that businesses owe their existence to their owners and should be expected to operate to their benefits. Thus, ROI is an overall financial performance measure to which all activities of an organization ultimately contribute to.

History

The name comes from the DuPont Company where Frank Donaldson Brown (1885-1965), initially an explosive salesman, invented the approach in an internal efficiency report in 1914. This was an important development, if not a major breakthrough, in the evolution of business away from family-controlled companies—where success was often assessed by crude measures of sales and costs or the arbitrary opinions of family members—and toward the model of the modern corporation and professional managers, embracing scientific and statistical techniques to analyze increasingly far-flung and dissimilar business units. DuPont quickly made ROI their primary performance measure for all of its operating departments. The past performance of successful businesses was used to create ROI targets for newer products and ventures. In time, an ROI forecast was required for all capital appropriations and projects submitted for approval to DuPont's senior management.

When DuPont acquired a controlling stake in General Motors in 1921, Brown was asked to become Vice President of Finance and clean up the car maker's finances. His techniques became enmeshed with American management pioneer, Alfred Sloan, who was then the automaker's chief executive. Sloan gave Brown and his planning and control systems much of the credit for GM's successful turnaround. After the Second World War, these techniques and methods spread across industry.

The Basic Model

The model builds up ROI (or "R", as denoted by Brown) from the fundamentals of cost, sales and investment. Most importantly, Brown observed that positive ROI is the product of profit margin (profit on sales, P) and turnover (turnover rate of invested capital, T): $R = P \times T$

Technically, from today's accounting perspective, R is return on assets rather than return on investment (as investments are a subset of a company's assets on the balance sheet), following Brown's terminology it is called "ROI", "a final and fundamental measure of industrial efficiency in terms of management's primary responsibility" [Brown 1977]. The formal system turned away from mere collections of isolated key figures. Instead a closed model of mutually dependent indicators should make dependencies and interactions analyzable.

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[5] APICS dictionary, 14th ed.

[6] This is used for the Gartner Supply Chain Top 25, see part 2.2 of the AEF course.

[7] Also known as DuPont Chart, DuPont System of Financial Control, DuPont Identity, DuPont Equation, DuPont Model, or DuPont Method

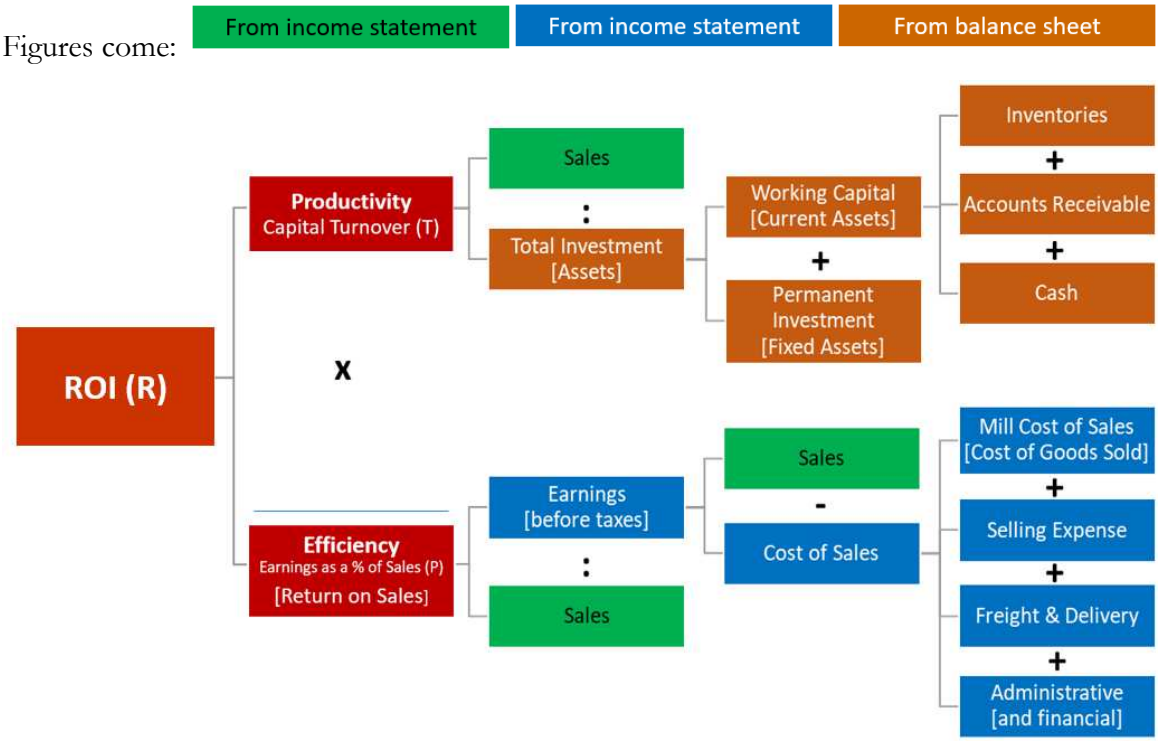
The model assumes that the primary goal of corporate management is not profit maximization, but rather maximizing the result per unit of capital invested in the long term. The orientation towards the key figure ROI should enable lasting value-oriented corporate performance management. Many current KPI systems are based on the basic idea of the DuPont scheme.

The Components of ROI

The DuPont system uses the structure of a KPI pyramid. ROI represents the earning power of the company. It indicates what the company has done (and hopefully can do) with what it has, i.e. how much profit has been derived from all assets the company controls. ROI gives an indication of the capital intensity of the company, which depends on the industry; companies that require large initial investments will generally have lower ROI. ROI depends on two ratios: (1) capital turnover and (2) return on sales (ROS). A change in any of these will change the firms earning power.

These two ratios are affected by many factors. By mathematically breaking down the superordinate target figure, the various factors influencing the company's success are clearly presented.

The following graphic shows the original model with modern, generalized terms in "[]".



Capital turnover measures productivity: How often do the total assets turn though sales (a rate)?

The total investment or total assets are the sum of the current[8] and fixed assets of the company.

Return on sales (ROS) compares earnings (before taxes) to sales: How much profit has the company made relative to its sales? Earnings is sales minus cost of sales. Cost of sales include the cost of goods sold (COGS[9]), selling, general and administrative expenses (overheads), interest, depreciation, and other operating expenses.

Return on Equity – Extension of the Model to Include Leverage

Using modern terms, the model allows to calculate the profitability of the company's assets, the return on assets (ROA):

$$ROA = Net\ Margin \times Asset\ Turnover = \frac{Net\ Income}{Sales} \times \frac{Sales}{Total\ Assets}$$

[8] Some variants of the model adjust current assets by current liabilities to only use net current assets.
[9] Mill was used as a common term for factory.

This formula can be extended by adding the effect of financial leverage. Leverage results from using borrowed capital as a funding source (in addition to shareholders' equity) when investing to expand the firm's asset base: Financial leverage (also called "equity multiplier") is total assets divided by equity. Taken from the balance sheet, the difference between total assets and equity is equal to the company's liabilities[10].

This allows to calculate the profitability of the shareholders' equity or return on equity (ROE):

$$ROE = ROA \times Financial\ Leverage$$
$$= Net\ Margin \times Asset\ Turnvover \times Financial\ Leverage$$
$$= \frac{Net\ Income}{Sales} \times \frac{Sales}{Total\ Assets} \times \frac{Total\ Assets}{Equity}$$

In other words, ROE is an indication of how well a company uses investment funds to generate earnings growth.

Today, some refer to this extended version of the model when using the term DuPont Analysis.

Limitations of the Model

Like any management model, a warning must be expressed as to its application. The DuPont ROI model takes an arithmetic, retrospective view on what has happened over a defined period. Thus, by definition, it is not a sufficient tool for making forward-looking managerial decisions, especially when conditions and underlying cause-effect logic change (variability).

As an example, consider cash and inventories which are interchangeable in the model. This has resulted in the treatment of inventory as an asset beyond its pure backward-looking balance sheet view. Using cash to pay for higher than necessary inventories (raw materials, in process and finished goods) does not by itself change the ROI, but it ties up cash in a place where it rotates slowly (as expressed by low inventory turns) and therefore is not readily available when needed.

Another common malpractice is a unitized view of the model, using absorbed, unitized cost instead of period cost and applying absorbed unit cost to inventory valuation. This creates the illusion that producing more (without selling more) would lower the cost significantly while increasing Inventories only slightly and ROI would increase. However, if the inventory can't be sold within a short period, the accumulated overhead costs embedded in inventory would need to be written off with the obsolete inventory, resulting in lower ROI (or even a loss) at a later period.

This orientation towards short-term profitability targets does not consider long-term aspects of increasing the value of the company. It may also not be possible to draw direct conclusions about the productivity of the company, since balance sheet policy is decisive. When applied to business units or profit centers of a company (or even individual products, initiatives, or projects), there is a risk of overlooking the difference between marginal costs, relevant for decision making and fully cost absorbance, thus creating local optima at the detriment of global performance.

Brown was aware of such risks as he sought to evaluate performance in terms of sustainable growth as opposed to short-term increases that would sacrifice long-term prospects for short-term profit.

References

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[10] Liabilities are aggregated on the balance sheet as current liabilities and long-term liabilities. Current liabilities are expected to be paid within one year, e.g. taxes and accounts payable, current portion on long-term debts. All other liabilities are classified as long-term liabilities.