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## Ratio Analysis in International Financial Reporting Standards: Issues and Challenges

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### ABSTRACT

This study focuses on ratio analysis in International Financial Reporting Standards (IFRSs) Environment: Issues and Challenges, which becomes a relevant study now. The adoption of IFRS by many nations has put many accountants off the former methods of doing accounts, especially in developing countries like Nigeria. The objective of this study is to treat ratio analysis in IFRS Environment, touching issues relating to terminologies as well as fully identifying the limitations of ratio analysis in that perspective. The study used analytical/illustrative tool. The study discovered that IFRS had impacted a lot of changes in terminologies and arrangements on the Financial Statements cum ratio analysis, which is based on financial statements. It recommended that Financial Reporting Council of Nigeria (FRC) should wake up to deeper trainings of educators and accountants in IFRS applications.

**Keywords:** International Financial Reporting Standards (IFRS), Ratio Analysis, Capital Market and Financial Ratio

### Introduction

The accounting world is divided into three blocks: the rule-based for US; directive based for EU states and principles-based by rest of the world including Nigeria. In this study, previous literatures show that countries adopt IFRS (International Financial Reporting Standards) to change domestic accounting systems towards a more capital market orientated systems (d'Arcy, 2001). In general the literatures noted that adoption of IFRS by firms leads to improved disclosure quality and investor protection, and make capital markets more accessible to foreign investors (Daske and Gebhardt, 2006; Barth *et al.*, 2005; Kang *et al.*, 2005). The evidence from these studies is mostly from continental European countries that are also classified as code-law and/or credit-based countries. However, experts are yet to study how IFRS adoption can impact on accounting ratio formulae. Although prior studies report economic consequences of the IFRS adoption, there is very few evidence on ratio analysis based on IFRS impacted financial statements and IFRS adoption on key accounting ratios that are used by financial analysts and loan officers as key performance indicators (Anna-maija Lantto and Petri Sahlström, 2007). The paper would be tackled as follows: ratio analysis

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in IFRS environment (terminologies), its illustrations as well as its limitations in that perspective.

### **Statement of the Problem**

Considering the enormous benefits of adopting International Financial Reporting Standards (IFRSs) and Accounting ratios as the most powerful of all the tools used in the analysis/interpretation/comparison of financial statements of corporate entities globally, many experts, professionals and researchers especially in developing countries like Nigeria show confusions, apprehensions and uncertainties in the adoption and transition of IFRS regarding terminologies and arrangements of elements of financial statements in arriving at ratio or its analysis (interpretation). This is the problem the paper is seeking to solve.

### **Objectives of the Study**

- i. To show the formulae of ratios in IFRS environment (terminologies).
- ii. To apply the formulae in IFRS terminologies in calculating financial ratios.
- iii. To identify the impact of changes due to IFRS terminologies on understandability of financial statements.
- iv. To identify the benefits and limitations of financial ratios.

### **Research Questions**

- i. Could you identify formulae of financial ratios in IFRS environment (terminologies)?
- ii. Could you apply the formulae of ratios in IFRS environment (terminologies)?
- iii. Could you identify the benefits and limitations of financial ratios?
- iv. Could you identify the impact of changes due to IFRS terminologies on understandability of financial statements?

### **Statement of Hypotheses**

H<sub>01</sub>: IFRS adoption does not affect the terminologies in the formulae of financial ratio analysis/interpretation.

H<sub>02</sub>: The formulae of financial ratios in IFRS environment (terminologies) do not affect the calculation of financial ratios.

H0<sub>3</sub>: The impact of changes due to IFRS terminologies does not affect the understandability of financial statements.

### **Literature Review**

To ACCA (2010), Financial Analysis is the selection, evaluation, and interpretation of financial data, with other pertinent information, to assist in investment and financial decision-making. Financial analysis may be used internally to evaluate issues such as employees' performance, the efficiency of operations and credit policies, and externally to evaluate potential investments and the credit-worthiness of borrowers, among other things.

Financial Analysis is the interpretation and translation of facts and data contained in the financial statements, the purpose being the drawing of relevant conclusions there from making of inferences as to business operation, financial positions, future prospects and trends. The analysis can be horizontal – comparing data of financial statements of two or more consecutive accounting periods in order to ascertain whether performance has improved or not and vertical analysis – comparing data of two or more investment centres during the same accounting period, usually to appraise the performance of these portfolios or investment outlets (ICAN, 2009). It can be internal if applied to one company alone or external if applied to more than one company.

There are many tools in Financial Analysis such as Ratio Analysis among which is Financial Ratio Analysis.

**Financial Ratio:** The Financial Ratios have become the tool of financial analysis in predicting for financial crises and remedial strategies, especially now corporate failures are the order of the day. A ratio is a mathematical relation between one quantity and another. Adding, Pamela noted that a financial ratio is a comparison between one bit of financial information and another. Financial ratios relate to two figures applicable to different categories.

However, a ratio is the arithmetic relationship between two figures in a set of financial statements. It can be presented in a number of forms. Firstly, as a percentage, where one figure is divided by another and multiply by 100. Secondly, as a fraction, where one figure is divided by another. Thirdly, as a period of time, where one figure is divided by another and multiplied by a time period (usually a month). Finally, as a proportion by setting one figure to 1, showing the other figure as a relative value to 1. The particular form of presentation chosen for any relationship examined is the one which the analysts can best interpret – for instance, some people prefer to look at time periods while others prefer percentages. It is mathematically possible to calculate a very large

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number of ratios from any given set of financial statements; though experience has shown that certain ratios are most meaningful.

Financial ratios may be used by managers within a firm, by current and potential shareholders (owners) of a firm, and by a firm's accounts payables (creditors). Security analysts use financial ratios to compare the strengths and weaknesses in various companies (Groppelli and Ehsan, 2000). If shares in a company are traded in a financial market, the market price of the shares is used in certain financial ratios.

**Benefits and Types of Ratios:** Financial ratios quantify many aspects of a business and are an integral part of the financial statement analysis. Financial ratios are categorized according to the financial aspect of the business which the ratio measures. To Groppelli and Ehsan (2000) Liquidity ratios measure the availability of cash to pay debt; Activity ratios measure how quickly a firm converts non-cash assets to cash assets; Debt ratios measure the firm's ability to repay non-current liability (long-term debt); Profitability ratios measure the firm's use of its assets and control of its expenses to generate an acceptable rate of return; and Market ratios measure investor response to owning a company's shares and also the cost of issuing shares.

Financial ratios allow for comparisons

- Between companies
- Between industries
- Between different time periods for one company
- Between a single company and its industry average

Ratios generally hold no meaning unless they are benchmarked against something else, like past performance or another company. Thus, the ratios of firms in different industries, which face different risks, capital requirements, and competition, are usually hard to compare.

### **Limitations of Financial Statements and Ratio Analysis**

**Historical Cost Accounts:** Ratios are a tool to assist analysis. They help to focus attention systematically on important areas and summarize information in an understandable form and they assist in identifying trends and relationships. However ratios are not predictive if they are based on historical information. They ignore future action by management; they can be manipulated by window dressing or creative accounting; and they may be distorted by differences in accounting policies (IAS 40 and IAS 16).

**Inter-firm Comparisons:** It can be useful to compare ratios for an individual company with those of other firms in the same industry.

However, comparing the financial statements of similar businesses can be misleading because: the businesses may use different accounting policies, whose ratios may not be calculated according to the same formula (for example, there are several possible definitions of gearing and ROCE).

**Insufficient Information/Data:** In practice, it is likely that the information available in the financial statements may not be enough to make a thorough analysis. You may require additional financial and non financial information such as: budgeted figures; other management information; industry averages; figures for a similar business; figures for the business over a period of time; market share; key employee information; sales mix information; product range information; the size of the order book; *and* the long-term plans of management.

**Specialised, Not-For-Profit and Public Sector Organisations:** The main financial aim of specialised, not-for-profit and public sector organisations is not to achieve a profit or return on capital but to achieve value for money. Value for money is achieved by a combination of the three Es: Effectiveness — success in achieving its objectives/providing its service; Efficiency — how well its resources are used; and Economy — keeping cost of input low. As profit and return are not so meaningful, many ratios will have little importance in these organisations, for example: ROCE; gearing; *and* investor ratios in general.

**Related Parties:** Two parties are considered to be related if one party has the ability to control the other party or exercise significant influence over the other party, or the parties are under common control. They could be distortion of financial statements.

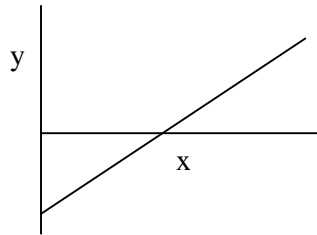
**Linearity and Proportionality Assumption:** A linear and proportional relationship is assumed between the two figures used to calculate the ratio; there is little evidence to support this assumption. This has been in the linear and proportional assumptions in ratio analysis below:

An accounting ratio can be defined as:

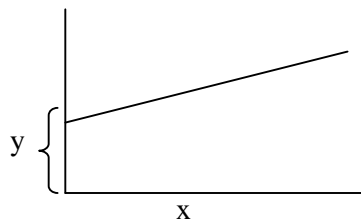
$$b = \frac{y}{x}$$

Where  $y$  and  $x$  are two figures take from a set of company financial statements. Rearing this equation, we get:  $y = b.x$ . If we were to plot  $y$  against  $x$  a straight line crossing the origin arises:

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However, there is little evidence to justify these assumptions linearity and proportionality. The relationship between x and y may not be proportional, in which case it may look like:



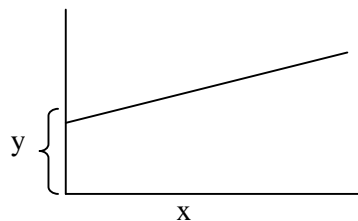
And be represented by the following equation:  $y = a + b.x$

By rearrangement of the above equation we get the following ratio:

$$b = \frac{y - a}{x}$$

Alternatively, the relationship between x and y may also be non-linear, in which case it may look as shown above and be represented by the following:  $y = a + bx^2$

By rearrangement of this equation we find the ratio is:  $b = \frac{y-a}{x^2}$



And be represented by the following equation:  $y = a + b.x$

By rearrangement, of the above equation we get the following ratio:

$$b = \frac{y - a}{x^2}$$

### **Ratios in the environment of International Financial Reporting Standards (IFRS)**

Values used in calculating financial ratios are taken from the statements drawn in International Financial Reporting Standards (IFRS) compliant/environment such as the statement of financial position, statement of comprehensive income, statement of cash flows and /or the statement of changes in equity. These comprise the firm's "accounting statements" or financial statements. The statements' data are based on the accounting method and accounting standards used by the organization, now IFRS instead of Statement of Accounting Standards (SAS). A number of ratios can be calculated to help interpret the financial statements. In any given situation, you may not need to calculate all of the ratios at the same time, so you must make a choice: Choose those relevant to the situation; Choose those relevant to the party you are analyzing for; and Make use of any additional information available to help your choice. Analysts will, in practice, be limited in the analysis that can be performed by the amount of information available. They are unlikely to have access to all the facts which are available to a company's management.

**Accounting Methods and Principles:** Financial ratios may not be directly comparable between companies that use different accounting methods or follow various standard accounting practices. Most public companies are required by law to use generally accepted accounting principles for their home countries, but private companies, partnerships and sole proprietorships may not use accrual basis accounting. Large multi-national corporations may use International Financial Reporting Standards to produce their financial statements, or they may use the generally accepted accounting principles of their home country.

There is no international standard for calculating the summary data presented in all financial statements, and the terminology is not always consistent between companies, industries, countries and time periods. Ratios are of limited use on their own, thus most of the marks in an examination question will be available for sensible, well-explained and accurate comments on the key ratios.

If you doubt that you have anything to say, the following points should serve as a useful checklist: What does the ratio literally mean?; What does a change in the ratio mean?; What is the norm; and What are the limitations of the ratio?

This section of the paper outlines the types of ratios (Appendix IV), their formulae in an IFRS environment (Appendix IV) and illustrations of such ratios (Appendixes I and II).

## **Methodology**

The data for this research were collected through the administration of structured questionnaires. Population of the study is made up of professional and non professional accountants in employment of public and private companies in Afikpo Urban and Accounting lecturers from Department of Accountancy in Akanu Ibiam Federal Polytechnic Unwana. The sample however, consisted of 420 selected at random. The selection of the sample was independent of sex and the demographic characters of the subject included age range of 25 – 60. The instrument consisted of a 13 – term survey questionnaire with a Likert scale response options, of Strongly Agree (SA - 5); Agree (A - 4); Strongly Disagree (SD- 3); Disagree (D – 2); Undecided (U – 1). Out of 100 questionnaires administered, 95 valid responses were returned and analysed. The validation of the questionnaires was done through the use of expert in the field of Accountancy and a pre-test reliability determination yielded stability Co-efficient of 82% which was considered well enough for the study. The work experience, job status and educational attainments of the respondents were considered when the questionnaires were being administered on the respondents. Pearson Product Movement Correlation Method (PPMCM) was used to confirm the hypotheses of the study, using the responses from question 1, 7 and 12 of the questionnaire administered. Hypotheses were tested at 5% level of significance.

## **Analysis of Results**

### ***Hypothesis One***

IFRS does not affect the terminologies in the formulae of ratio analysis/interpretation? Data obtained were statistically analysed using Pearson's Product Movement Coefficient Method (PPMCM). Results are presented in table one (1) as shown in **Appendix III**, which shows that  $\gamma$  calculated is 0.55 and greater than 0.5 level of significance. The result shows that the null hypothesis is rejected while its alternative is accepted instead. This implies that IFRS affects the terminologies used in calculating ratios as the standards have changed most of terminologies used in Financial Statements.

### ***Hypothesis Two***

The formulae of ratios in IFRS environment (terminologies) do not affect the calculation of financial ratios? Data obtained were statistically analysed using Pearson's Product Movement Coefficient Method (PPMCM). Results are presented in table two (2) as shown in **Appendix III**, which shows that  $\gamma$  calculated is 0.84 and greater than 0.5 level of significance. This implies that there exists positive relationship, leading to rejection of the null hypothesis and accepting the alternative. That is, "the formulae of ratios in IFRS environment affect the calculation of financial ratios".



### **Hypothesis Three**

The impact of changes due to IFRS terminologies does not affect the understandability of financial statements? Data obtained were statistically analysed using Pearson's Product Movement Coefficient Method (PPMCM). Results are presented in table three (3) as shown in **Appendix III**, which shows that  $\gamma$  calculated is 0.74 and greater than 0.5 level of significance. This implies that the changes if not properly applied in the calculation of ratios, it will affect the understandability of the financial statements and lead to distortion of facts as well as comparability difficulty.

### **Summary of Findings**

It was found that IFRS has lead to change in terminologies of the contents of the financial statements and has affected the calculation of ratios. Also, it was found that the IFRS impacted changes can affect understandability of financial statements negatively.

Finally, it was found that the formulae of ratios in IFRS environment (terminologies) affect the calculation of financial ratios (see **Appendix I – II**).

### **Recommendation**

The revelation from experts, professionals and researchers shows global confusions, apprehensions and uncertainties built around the IFRS transition and adoption. Impact of IFRS on ratios and ratio analysis are major issues that resulted into wonder as to the terminologies and arrangements of elements of financial statements to arrive at what ratio or its analysis/interpretation. It is true that the revolution is here but many can claim authority to every aspect of IFRS including the interpretation of IFRS financial statements. Therefore, it is recommended that Financial Reporting Council of Nigeria (FRC) should wake up to deeper trainings/workshops of educators and accountants in IFRS applications.

### **Conclusion**

From the paper it could be seen that many terms from the financial statements have been affected by IFRS. For instance, stock has become inventory and debtors' collection period becomes Accounts Receivable period and other ones. As IFRS classified and reclassifies an item, so such item will affect the resulting ratio and the accompanying interpretation, such as equity and equity related items and others.

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## Appendix: I

### Data Analysis/Interpretations

The information used here in the analyses are derived from the **data** in **Appendix II**

#### 1. Profitability Ratios

	<b>20 x 2</b>	<b>20 x 1</b>
ROCE	400/1,510 = 26.4%	340/1,420 = 23.9%
Gross profit margin	800/1,500 = 53.3%	700/1,000 = 70.0%
Operating profit margin	400/1,500 = 26.7%	340/1 000 = 34.0%
Asset turnover	1,500/1,510 = 0.99	1,000/1,420 = 0.70

#### 2. Liquidity and Working Capital Ratios

	<b>20 x 2</b>	<b>20 x 1</b>
Current ratio	700/1,070 = 0.65: 1	200/380 = 0.53: 1
Quick ratio	400/1,070 = 0.37: 1	100/280 = 0.26: 1
Inventory collection period	300/700 x 365 156 days 2.3 times	100/300 x 365 122 days 3.0 times
Accounts receivable collection period	400/1,500 x 365 97 days	70/300 x 365 36.5 days
Accounts payable Payment period	370/700 x 365 193 days	70/300 x 365 85 days

#### 3. Investor Ratios

	<b>20 x 2</b>	<b>20 x 1</b>
Dividend paid	110 000	100 000
Profit after tax expense	200 000	170 000
Ordinary share capital – N1 each	1 200 000	1 200 000
Current/market share price	N 1.00	N1.00
Dividend yield	= $\frac{110\,000}{1\,200\,000} \times 100\%$ N 1.00 9.17%	$\frac{100\,000}{1\,200\,000} \times 100\%$ N1.00 8.33%
Dividend cover	$\frac{200\,000}{110\,000} \times 100\%$ 181.82%	$\frac{170\,000}{100\,000} \times 100\%$ 170%
P/E ratio	$\frac{1.00}{200\,000}$ 1 200 000 5.88	$\frac{1.00}{170\,000}$ 1 200 000 7.04

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## Appendix: II

### DATA

#### Statement of Financial Position for Ocean Motors

	20 x 2		20 x 1	
	₦000	₦000	₦000	₦000
<b>Non-current assets:</b>				
Land and buildings				
Cost	1,600		400	
Depreciation	(200)		(150)	
	<u>1,400</u>		<u>1,300</u>	
<b>Plant and Machinery:</b>				
Cost	600		400	
Depreciation	(120)		(100)	
	<u>480</u>		<u>300</u>	
	<u>1,880</u>		<u>1,600</u>	
<b>Current Assets:</b>				
Inventory	300		100	
Receivables	400		100	
	<u>700</u>		<u>200</u>	
Total assets	<u>2,580</u>		<u>1,800</u>	
<b>Equity:</b>				
Share capital ₦1 ordinary shares	1,200		1,200	
Retained earnings	310		220	
	<u>1,510</u>		<u>1,420</u>	
<b>Current Liabilities:</b>				
Bank overdraft	590		210	
Payables and accruals	370		70	
Taxation liability	110		100	
	<u>1,070</u>		<u>380</u>	
	<u>2,580</u>		<u>1,800</u>	

#### Income Statements for Ocean Motors

	20 x 2		20 x 1	
	₦000	₦000	₦000	₦000
Sales revenue	1,500		1,000	
Cost of sales	(700)		(300)	
Gross profit	<u>800</u>		<u>700</u>	
Administration and distribution expenses	(400)		(360)	
Net profit before tax	400		340	
Income tax expense	(200)		(170)	
Net profit after tax	<u>200</u>		<u>170</u>	

The dividend for 20 x 1 was ₦100,000 and for 20 x 2 was ₦110,000.

Appendix III

Calculation of Correlation (γ)

Table 1: Calculation of Correlation for effects of IFRS terminologies

Options	Points(X)	Response(Y)	XY	X <sup>2</sup>	Y <sup>2</sup>
SA	5	50	250	25	2 500
A	4	15	60	16	225
U	3	0	0	9	0
D	2	10	20	4	100
SD	1	20	20	1	400
<b>Σ</b>	<b>15</b>	<b>95</b>	<b>350</b>	<b>55</b>	<b>3 225</b>

Source: Field Work

$$\begin{aligned} \gamma &= \frac{Nxy - (\sum x)(\sum y)}{\sqrt{N\sum x^2 - (\sum x)^2} \sqrt{N\sum y^2 - (\sum y)^2}} \\ &= \frac{5(350) - (15 \times 95)}{\sqrt{(5 \times 55) - (15)^2} \sqrt{(5 \times 3225) - (95)^2}} \\ &= \frac{1750 - 1425}{\sqrt{(275 - 225)(16125 - 9025)}} \\ &= \frac{325}{(50)(7100)} \\ &= \frac{325}{596} \end{aligned}$$

γ = 0.55(55%)

Table 2: Calculation of Correlation for the Formulae of Ratios in IFRS Environment

Options	Points(X)	Response(Y)	XY	X <sup>2</sup>	Y <sup>2</sup>
SA	5	66	330	25	4 256
A	4	20	80	16	400
U	3	2	6	9	4
D	2	5	10	4	25
SD	1	2	2	1	4
<b>Σ</b>	<b>15</b>	<b>95</b>	<b>428</b>	<b>55</b>	<b>4 689</b>

Source: Field Work

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$$\begin{aligned} \gamma &= \frac{Nxy - (\sum x)(\sum y)}{\sqrt{N\sum x^2 - (\sum x)^2} \sqrt{N\sum y^2 - (\sum y)^2}} \\ &= \frac{5(428) - (15 \times 95)}{\sqrt{(5 \times 55) - (15)^2} \sqrt{(5 \times 4689) - (95)^2}} \\ &= \frac{2140 - 1425}{\sqrt{(275 - 225)(23445 - 9025)}} \\ &= \frac{715}{(50)(14420)} \\ &= \frac{715}{849} \end{aligned}$$

$$\gamma = 0.842$$

$$\gamma = 84\%$$

Table 3: Calculation of Correlation for the Impact of Changes Due to IFRS Terminologies

Options	Points(X)	Response(Y)	XY	X <sup>2</sup>	Y <sup>2</sup>
SA	5	55	275	25	3 025
A	4	20	80	16	400
U	3	0	0	9	0
D	2	10	20	4	100
SD	1	10	10	1	100
<b>Σ</b>	<b>15</b>	<b>95</b>	<b>385</b>	<b>55</b>	<b>3 625</b>

Source: Field Work

$$\begin{aligned} \gamma &= \frac{Nxy - (\sum x)(\sum y)}{\sqrt{N\sum x^2 - (\sum x)^2} \sqrt{N\sum y^2 - (\sum y)^2}} \\ &= \frac{5(385) - (15 \times 95)}{\sqrt{(5 \times 55) - (15)^2} \sqrt{(5 \times 3625) - (95)^2}} \\ &= \frac{1925 - 1425}{\sqrt{(275 - 225)(18125 - 9025)}} \end{aligned}$$

$$\begin{aligned}
 &= \frac{500}{(50)(9100)} \\
 &= \frac{500}{675} \\
 &= 0.74(70\%)
 \end{aligned}$$

## Appendix IV

### Types of Ratios in IFRS Environment (Terminologies)

#### Profitability Ratios

*Gross profit margin or Gross Profit Rate* (Williams, Susan, Mark and Joseph, 2008):

Gross margin:

$$\frac{\text{Gross Profit}}{\text{Net Sales}}$$

OR

$$\frac{\text{Net Sales} - \text{COGS}}{\text{Net Sales}}$$

*Operating Income Margin, Operating profit margin or Return on sales (ROS)* (Williams, Susan, Mark and Joseph, 2008):

Operating margin:

$$\frac{\text{Operating Income}}{\text{Net Sales}}$$

Recognize that Operating income is the difference between operating revenues and operating expenses, but it is also sometimes used as a synonym for EBIT and operating profit. This is true if the firm has no non-operating income. (Earnings before interest and taxes / Sales (Bodie, Alex and Alan, 2004)

*Net margin or net profit margin* (Groppelli and Ehsan, 2000):

Profit margin:

$$\frac{\text{Net Profit}}{\text{Net Sales}}$$

Return on equity (ROE):

$$\frac{\text{Net Income}}{\text{Average Shareholders Equity}}$$

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### **Capital Employed Ratio**

Return on investment (ROI ratio):  $\frac{\text{Net Income}}{\text{Average Owners Equity}}$

Return on assets (ROA):

$$\frac{\text{Net Income}}{\text{Total Assets}}$$

Return on assets (Cram, 2008):

$$\left(\frac{\text{Net Income}}{\text{Net Sales}}\right)\left(\frac{\text{Net Sales}}{\text{Total Assets}}\right)$$

Return On Equity (ROE):

$$\left(\frac{\text{Net Income}}{\text{Net Sales}}\right)\left(\frac{\text{Net Sales}}{\text{Average Assets}}\right)\left(\frac{\text{Average Assets}}{\text{Average Equity}}\right)$$

Return On Net Assets (RONA):

$$\frac{\text{Net Income}}{\text{Non – current Assets} + \text{Working Capital}}$$

Return On Capital (ROC):

$$\frac{\text{EBIT}(1 - \text{Tax Rate})}{\text{Invested Capital}}$$

Risk Adjusted Return On Capital (RAROC):

$$\frac{\text{Expected Return}}{\text{Economic Capital}}$$

OR

$$\frac{\text{Expected Return}}{\text{Value at Risk}}$$

Return On Capital Employed (ROCE):

$$\frac{\text{EBIT}}{\text{Capital Employed}}$$

Note: this is somewhat similar to (ROI), which calculates Net Income per Owner's Equity



Cash Flow Return On Investment (CFROI):

$$\frac{\text{Cash Flow}}{\text{Market Recapitalization}}$$

Efficiency Ratio:

$$\frac{\text{Non – interest Expense}}{\text{Revenue}}$$

Net Gearing:

$$\frac{\text{Net debt}}{\text{Equity}}$$

Basic Earnings Power Ratio (Weston, 1990):

$$\frac{\text{EBIT}}{\text{Total Assets}}$$

### **Liquidity/Working Capital Ratios**

*Current Ratio (Working Capital Ratio):*

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

*Acid-test Ratio (Quick Ratio):*

$$\frac{\text{Current Assets – (Inventories + Prepayments)}}{\text{Current Liabilities}}$$

*Cash Ratio:*

$$\frac{\text{Cash and Marketable Securities}}{\text{Current Liabilities}}$$

*Operation Cash Flow Ratio:*

$$\frac{\text{Operation Cash Flow}}{\text{Total Debts}}$$

### **Inventory Turnover Periods/Activity/Efficiency Ratios**

*Average Collection Period:*

$$\frac{\text{Accounts Receivable}}{\text{Annual Credit Sales} \div 365 \text{ Days}}$$

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*Degree of Operating Leverage (DOL):*

$$\frac{\text{Percent Change in Net Operating Income}}{\text{Percent Change in Sales}}$$

*Degree of Sales Operation (DSO) Ratio (Houston and Brigham, 2009):*

$$\frac{\text{Accounts Receivable}}{\text{Total Annual Sales} \div 365 \text{ Days}}$$

*Average Payment Period (Groppelli and Ehsan, 2000):*

$$\frac{\text{Accounts Payable}}{\text{Annual Credit Purchase} \div 365 \text{ Days}}$$

*Asset Turnover:*

$$\frac{\text{Net Sales}}{\text{Total Assets}}$$

*Inventory Turnover Ratio (Weyandt, Kieso and Kell, 1996):*

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

*Accounts Receivables Turnover Ratio:*

$$\frac{\text{Net Credit Sales}}{\text{Average Net Receivables}}$$

*Inventory Conversion Ratio:*

$$\frac{365}{\text{Inventory Turnover}}$$

*Inventory Conversion Period (essentially same thing as above):*

$$\left( \frac{\text{Inventory}}{\text{Cost of Goods Sold}} \right) 365 \text{ Days}$$

*Accounts Receivables Conversion Period:*

$$\left[ \frac{\text{Accounts Receivables}}{\text{Net Sales}} \right] 365 \text{ Days}$$

Accounts Payables Conversion Period:

$$\left( \frac{\text{Accounts Payables}}{\text{Purchase}} \right) 365 \text{ Days}$$

Cash Conversion Cycle:

$$\text{Inventory Conversion Period} + \text{Accounts Receivables Conversion Period} \\ - \text{Accounts Payables Conversion Period}$$

### Long-Term Financial Stability/Non-current liability (Debt) ratios (leveraging ratios)

Debt ratio:

$$\frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Debt to equity ratio:

$$\frac{\text{Non – current liability (Long Term Debt)} + \text{Value of Leases}}{\text{Average Shareholders' Equity}}$$

Non-current liability (Long-term Debt) to equity (LT Debt to Equity):

$$\frac{\text{Non – current liability (long term debt)}}{\text{Total Assets}}$$

Times' Interest-Earned Ratio / Interest Coverage Ratio:

$$\frac{\text{EBIT}}{\text{Annual Interest Expense}}$$

OR

$$\frac{\text{Net Income}}{\text{Annual Interest Expense}}$$

Debt service coverage ratio:

$$\frac{\text{Net Operating Income}}{\text{Total Debt Service}}$$

### Investor Ratios/Market Ratios

Earnings Per Share (EPS):

$$\frac{\text{Net Earnings}}{\text{Number of Shares}}$$

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Payout ratio:

$$\frac{\text{Dividends}}{\text{Earnings}}$$

**OR**

$$\frac{\text{Dividends}}{\text{EPS}}$$

Dividend Covers (the Inverse of Payout Ratio):

$$\frac{\text{Earnings per Share}}{\text{Dividends per Share}}$$

P/E Ratio:

$$\frac{\text{Market Price per Share}}{\text{Diluted EPS}}$$

Dividend Yield:

$$\frac{\text{Dividend}}{\text{Current Market Price}}$$

Cash Flow Ratio or Price/Cash Flow Ratio:

$$\frac{\text{Market Price per Share}}{\text{Present Value of Cash Flow per Share}}$$

Price to Book Value Ratio (P/B or PBV):

$$\frac{\text{Market Price/Share}}{\text{Statement of Financial Position Price/Share}}$$

Price/Sales Ratio:

$$\frac{\text{Market Price per Share}}{\text{Gross Sales}}$$

PEG Ratio:

$$\frac{\text{Price per Earnings}}{\text{Annual EPS Growth}}$$

**Other Market Ratios:**

EV/EBITDA:

$$\frac{\text{Enterprise Value}}{\text{EBITDA}}$$

EV/Sales:

$$\frac{\text{Enterprise Value}}{\text{Net Sales}}$$

Cost/Income Ratio:

*Sector – specific ratios: EV/capacity and EV/output*

### **Capital Budgeting Ratios**

In addition to assisting management and owners in diagnosing the financial health of their company, ratios can also help managers make decisions about investments or projects that the company is considering to take, such as acquisitions, or expansion. Many formal methods are used in capital budgeting, including the techniques such as Net present Value (NPV); Profitability Index (PI); Internal Rate of Return (IRR); Modified Internal Rate of Return (MIRR); and Equivalent annuity.

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**Reference** to this paper should be made as follows Ukpai, U.I (2013), Ratio Analysis in International Financial Reporting Standards: Issues and Challenges. *J. of Business and Organizational Development Vol. 5, No. 2, Pp. 13 – 33.*

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