



An Analysis of Working Capital Trends

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Abstract: *The present research paper was shown the calculation of trend analysis and Chi- Square test formula used by the researcher. Trend ratio or trend percentages are the primary tools for trend analysis of a firm. “The ratios of the magnitudes of a financial statement item in a series of statements to its magnitudes in one of the statement selected as the base may be called trend ratios”. They are, in fact, index numbers of the movements of the various financial factors of a business. The trend ratios computed by assigning the number 100 to times of the base year. The percentage of each item of successive year is calculated in relation to the base year.*

Key Words: *Time Series, Chi-Square test, Working Capital Trend -WCT.*

I. INTRODUCTION

Capital Trends:

In working capital analysis the direction of change over a period of time is of crucial importance. Working capital is one of the important parts in the subject of Financial Management. So, it is very essential for an analyst of the present study about the trends and direction of working capital. The working capital trend analysis represents a picture of variation in current assets and current liabilities difference a period of time. Such an analysis enables to in present research upward and downward trends in current assets and current liabilities and its effect on the working capital position.

As per words of S.P. Gupta:

“The term ‘trend’ is very commonly used in day-to-day conversation. Trend, also called secular or long-term trend, is the basic tenancy of production, sales, income, current assets and current liabilities etc, to grows or decline over a period of time”

According to R.C. Gulezian:

“The trend is defined as a smooth, irreversible movement in the series; it can be increasing or decreasing.”

As per D. N. Elhance:

“Secular trend is the effect of such factors, which are more less constant for long time or which change very gradually or slowly. Such factors are changes in population or tastes and habits of people etc.”

However, it depends on the nature of data whether it can be regarded as long term or short term. It can also not necessary that the rise and fall continue in the same direction throughout a very long period of time.

Emphasising the importance analysis of working capital trends,

Man Mohan and Goyal have pointed out that:

“Analysis of working capital trends provides a base to judge whether the practice and prevailing policy of the management with regard to working capital is good enough or an improvement is to be made in managing the working capital funds. Further, any one trend by itself is not very informative and therefore, comparison with related trends should also be made by an analyst.” They have illustrated their ideas in these words: “

II. SOME IMPORTANT QUESTIONS OF THE STUDY

Some important questions to which the study attempts to seek answer as follows:-

- ➔ Whether paper companies have planted their working capital requirement properly.
- ➔ What should be the alternative sources of funds for working capital requirement in the paper companies?

III. OBJECTIVES OF THE STUDY

- ➔ To study the various factors affecting working capital requirements of selected paper companies in India.
- ➔ To analyze and evaluated working capital management



IV. RESEARCH METHODOLOGY

- ➔ The study was preliminary based on the published accounts and annual report of the selected paper company under review.
- ➔ Selected Paper Company was belonging in the public sector.

V. THE SCOPE OF THE STUDY

- ➔ Sampling method was convenient and Judgment sampling also. The samples paper company had been selected from the following factor.
- ➔ The selected paper company was selected on the basis of maximum licenses capacity, installed capacity and seals.
- ➔ The selected paper company should be engaged in the production and seals of the paper.
- ➔ The selected paper company should be listed in the Stock Exchange of India.

VI. PERIOD OF THE STUDY

- ➔ The present study was undertaken by the researcher for the period of seven (7) Accounting years from 2005-2006 to 2011-12.
- ➔ The researcher had selected the base year 2005-2006 because this year was normal for the present research of analysis and evaluation of data.

VII. SAMPLE OF THE STUDY

- ➔ By the researcher following company had been selected for the purpose of the present research.
- ➔ The International Andhra Pradesh Paper Mills Limited (IAAPM)

VIII. METHOD OF DATA COLLECTION

- ➔ The main source of data used for the study was secondary data.
- ➔ From the annual profit and loss account and balance sheet figures as found in the annual reports of the selected paper company.
- ➔ The selected data was complemented through selected paper company websites, capital line software and report junction.com

IX. METHODS OF DATA INTERPRETATION AND ANALYSIS

A. Analysis of Time Series:

The time series is an arrangement of statistical data in accordance with time of its occurrence. Such series are of particular importance in the field of population, bank deposits, outputs, sales, profits etc. Time series analysis is used to detect patterns of change in statistical information over regular intervals of time. We project these patterns to arrive at an estimate for the future.

Levin has defined that:

“Time series analysis is the quantitative method we use to determine patterns in data collected overtime.”

“A time series” as observed by Greenwalad:

“A time series is a temporal sequence or distribution with the observations chronologically arranged. Since time is present explicitly as a variable time series analysis often is considered a study of dynamic variability.”

According to Wessel, Willet and simone:

The variation of time series is usually broken down into four component element: secular trend, seasonal variation, cyclical variation and random or irregular influences. The change in the data is the result of the combined impact of these four components.

For the analysis of working capital of paper companies the secular trend values are proposed to be computed by the method of least squares at relevant places.

B. Chi -Square Test:

The chi-square test is the simplest and most widely used non-parametric test in statistical work. The chi-square is frequently used in testing of hypothesis concerning the different between a set of observed frequencies of a sample and a corresponding set of expected or theoretical frequencies.



S.P. Gupta holds the view that:-

“The quantity chi-square describes the magnitude of the discrepancy between theory and observation. Symbolically:

$$\text{chi - square} = \sum \frac{(O - E).^2}{E}$$

Where O refers to the observed frequencies and E refers to the expected frequencies.

The calculated value of chi-square is compared with the table value of chi-square for given degrees of freedom at a certain specified level of significance. If at the stated level (generally 5% level is selected) the calculated value of chi-square is more than the table value of chi-square, the difference between expected and observed value is considered to be significant, i.e., it could not have arisen due to chance factor. On the other hand, if the calculated value of chi-square is less than the table value, the difference between expected and observed values, is not considered as significant, i.e., it is regarded as due to fluctuations of simple sampling and hence ignored.

X. WORKING CAPITAL TRENDS IN PAPER COMPANY

In order to analyse the working capital trends of selected paper companies in India, the following methodology has been adopted:

- ➔ Figures of working capital have been extracted the various annual reports of the paper company.
- ➔ The period covered is from 2005 -2006 to 2011 -2012. For all these years indices have been calculated assuming 2005-2006, i.e., the first year of analysis as base year.
- ➔ As such the figures for this year work out at 100% for each company while the subsequent figures are its proportion.
- ➔ While analysing the working capital trends, the null hypothesis has been that the working capital trend of paper companies will conform to the straight line calculated by the method of least squares.

XI. DATA INTERPRETATION AND ANALYSIS

A. International Andhra Pradesh Paper Mills:

Table-1
Working capital Indices and Trend Value of IAPPM

Year (t)	NWC (y)	Indices	x = t-2008-09	X ²	xy	y = a +bx
2005 -06	1115.82	100.00	-3.00	9.00	-3347.46	5088.76
2006-07	5602.12	502.06	-2.00	4.00	-11204.24	5797.45
2007-08	8665.77	776.63	-1.00	1.00	-8665.77	6506.14
2008-09	7926.33	710.36	0.00	0.00	0.00	7214.83
2009-10	11994.88	1074.98	1.00	1.00	11994.88	7923.52
2010-11	14530.68	1302.24	2.00	4.00	29061.36	8632.21
2011-12	668.18	59.88	3.00	9.00	2004.54	9340.89
	50503.78		0.00	28.00	19843.31	

In the above table 1.1, y = a + bx in there (a) and (b) find as under these formulas.

$$\begin{aligned} \sum y &= na + b\sum x \\ 50503.78 &= 7a + b(0) \\ 50503.78 &= 7a \\ a &= 50503.78 \div 7 \\ a &= 7214.83 \end{aligned}$$

$$\begin{aligned} \sum xy &= a\sum x + b\sum x^2 \\ 19843.31 &= a(0) + b(28) \\ 19843.31 &= 28b \\ b &= 19843 \div 28 \\ b &= 708.69 \end{aligned}$$

$$y = a + bx$$



$$\begin{aligned} Y &= a + bx \text{ for the year } 2005 - 2006 \\ &= 7214.83 + 708.69 (-3) \\ &= 7214.83 - 2126.07 \\ &= 5088.76 \end{aligned}$$

$$\begin{aligned} Y &= a + bx \text{ for the year } 2006 - 2007 \\ &= 7214.83 + 708.69 (-2) \\ &= 7214.83 - 1414.38 \\ &= 5797.45 \end{aligned}$$

The above way calculated expected value for the all remaining years from 2007 -08 to 2011 – 12

B. Hypothesis Testing:

H_0 : Null Hypothesis:

- ➔ There is no significant difference in actual value and trend values of working capital of International Andhra Pradesh Paper mills limited.

H_1 Alternative Hypothesis:

- ➔ There is significant difference in actual value and trend values of working capital of International Andhra Pradesh Paper mills limited.

Table-1.1
Chi Square Test Result of NWC and Trend Value of IAPPM

NWC (y)= (O)	y = a +bx = (E)	(O - E)	(O - E) ²	(O - E) ² /E
1115.82	5088.76	-3972.94	15784226.70	3101.78
5602.12	5797.45	-195.33	38152.41	6.58
8665.77	6506.14	2159.63	4664018.71	716.86
7926.33	7214.83	711.50	506238.35	70.17
11994.88	7923.52	4071.36	16576010.06	2092.00
14530.68	8632.21	5898.48	34792007.33	4030.49
668.18	9340.89	-8672.71	75215979.28	8052.33
Chi- Square value				18070.22

C. Results of Chi-Square test

$$\begin{aligned} \text{Degree of freedom} &= r - 1, \\ &= 7 - 1 \\ &= 6, \end{aligned}$$

The above table no - 1.1.1 shows the calculated value of Chi – Square is 18070.22 while the table value of Chi –Square is only 12.59 at 5% level of significance of the IAPPM.

Chi - Square calculated > Chi –Square table value.

Thus the null hypothesis of straight line assumptions is rejected.

Hence, it can be concluded that in IAPPM the difference between the actual and trend values of working capital.

XII. LIMITATIONS OF THE STUDY

- ➔ The study is based on secondary data taken from published annual report of Paper Company its findings depend entirely on the accuracy of such data.
- ➔ The study should be based on 1 company belong to only are listed on Bombay stock exchange.
- ➔ The different methods of analysis of working capital management of selected paper companies in India in this connection view of experts differ from one other.



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