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‘WORKING CAPITAL MANAGEMENT’ – An Analysis And Its Impact On Profitability With Reference To Fertilizer Industry In India

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Abstract:

The Fertilizer Industry is one of the most and core industry in India. In India there are many large and developing industries (Crude oil, Coal, Refinery, Cement, Textile, Steel, FMCG, Agriculture) and has significant contribution to GDP of India. The main Objective of the study is to analyse the Working Capital Management Ratios and Net Profit Margin of company during the study period is 2019-20 to 2023-24. Data Collection is based on secondary data collection method. Sample Selection is judgemental non parametric sampling method is used. For Data Analysis ANOVA test is applied for Analysis of Working Capital Ratios and NPM, Correlation is used to know the relationship between Working Capital and Profitability and Regression is used know the how many impact is working of Working Capital on Profitability for selected companies. Findings is that are is no significant impact of Working Capital on Profitability.

Key Words : CR- Current Ratio, QR- Quick Ratio, ITR- Inventory Turnover Ratio, CashR- Cash Ratio, NPM- Net Profit Margin, WCM- Working Capital Management

Introduction:

The Fertilizer Industry is one of the most and core industry in India. In India there are many large and developing industries (Crude oil, Coal, Refinery, Cement, Textile, Steel, FMCG, Agriculture) and has significant contribution to GDP of India. Indian Fertilizer Market size was valued at USD 41.2 Billion in 2024. The fertilizer subsidy for the upcoming fiscal year is anticipated to be 1.75 trillion rupees ($21.10 billion), which is less than the current estimate of nearly 2 trillion rupees for the fiscal year 2022–2024. The union budget allocated ₹1.75 lakh crore for fertilizer subsidies for 2023-24. Government policies and subsidies have a substantial impact on the fertilizer market in India. Various government initiatives aimed at supporting farmers, such as subsidies on fertilizers, play a crucial role in driving fertilizer consumption. India ranks third place in the world's overall fertilizer production, second in nitrogen fertilizers, and third in phosphate fertilizers.

Working Capital:

Working+Capital prove their name for work those capital we need which called Working Capital. Working capital management is the process of managing a company's short-term financial assets and liabilities. It's a key function of financial management that helps companies maintain cash flow and meet short-term financial obligations. Working capital management helps companies run smoothly and avoid financial challenges. Working capital management is a business process that helps companies make effective use of their current assets and optimize cash flow. It's oriented around ensuring short-term financial obligations and expenses can be met, while also contributing towards longer-term business objectives.

Literature Review:

(Aggarwal & Chaudhary, 2015) Working capital is an important component of the capital of a firm that helps to carry out the day to-day activities. A well-managed working capital can help a firm to optimize itself. This study attempts to examine the effect of working capital on the profitability of Indian firms. A panel data of 364 companies listed on the Bombay Stock Exchange over a period of five years is obtained. The dependence of gross operating profit ratio on average inventory period, cash conversion cycle, debtors collection period and the creditors payment period is examined.

(Chang, July 2018) Previous studies have seldom explored issues regarding liquidity management; hence, Researcher conduct a global empirical analysis of the relationship between the cash conversion cycle (CCC) and corporate performance by adopting enterprises from different countries as samples. Researcher observe a negative relationship between the CCC and firm's profitability and value, supporting that an aggressive working capital policy can enhance corporate performance; however, this effect reduces or reverses when firms exist at the lower CCC level. Results remain identical after considering endogenous problems, changes in macroeconomic environments, economic development status, financial crises, corporate governance, and financial constraints.

(Hampus Bjorkman) The purpose of this study is to develop the research on the relationship between Working Capital Management and profitability by investigating how it is affected by different company characteristics. A quantitative method was applied with philosophical stances in objectivism and positivism and deductive theory was used to approach the subject. The conclusion drawn from the study is that there is a positive relationship between the Cash Conversion Cycle and profitability, inconsistent with previous research. However, strong significant results indicated that smaller firms are returning a higher profit, regardless the level of Cash Conversion Cycle.

(Jaworski & Czerwonka, 14 March 2024) This paper aims to determine the relationship between profitability and WCM, characterised by components of the company's operating cycle. The research is based on meta-analysis and meta-regression methods that allow for the combination and analysis of the outcomes of individual empirical studies using statistical methods. Our final research sample consists of 43 scientific papers from 2003 to 2018. These studies covered almost 62,000 enterprises in 35 countries from 1992 to 2017. Our results indicate that there is a common, negative relationship between profitability and the cash conversion cycle (CCC).

(Singhania, Sharma, & Yagnesh, 25 May 2014) The purpose of this paper was to examine the relationship between working capital management strategies of a firm and its profitability. We apply correlation analysis and fixed effects estimation on our sample of Indian manufacturing companies. Cash conversion cycle has been utilized as a measure of the working capital management, whereas gross operating profit is used as a proxy for a firm's profitability. The results reveal that cash conversion cycle of a company has a negative correlation with its profitability.

Research Objective:

1) To evaluate the comparative working capital position of companies.
2) To analyse the performance of selected companies.
3) To evaluate the relationship between working capital and profitability of company.

Hypothesis Of the Study:

1) H0 : There is a no significant difference between Working Capital Ratios of selected fertilizer companies during the study period.
2) H0 : There is no significant difference between Net Profit Margin Ratio of selected companies during the study period.
3) H0 : There is no significant relationship between Working Capital Ratios and Net Profit Margin of selected companies during the study period
4) H0 : There is no significant impact of Working Capital Management Ratios on Net Profit Margin Ratio of selected companies during the study period.

Period Of The Study:

Period of the study has been considered from 2019-20 to 2023-24..

Scope Of The Study:

There are mainly two scope of study 1) Functional Scope: In this working capital and profitability and their analysis is covered. And 2) Geographical Scope: Whole India is Geographical scope for the study.

Data Collection:

Data collection for this study is mainly based on secondary data collection method. Which published in annual reports of the company and official website of company and Government.

Sample Selection:

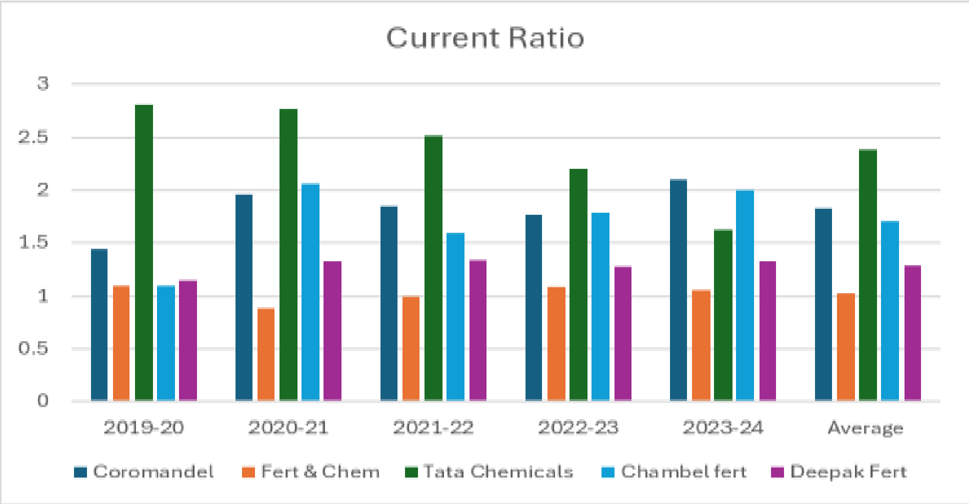
For the study population will be considered as top five Fertilizer companies are listed in National stock exchanges. Out of that following samples will be taken as best representative of population of the study. For the study non probability judgmental sampling technique will have been used and based on market cap.

Sample	Market Cap
1.Coromandel International Ltd	53939.40
2. Fertilizers and Chemicals Travancore Ltd	53344.61
3. Tata Chemicals Ltd	22840.17
4. Chambal Fertilizers and Chemical Ltd	21402.85
5. Deepak Fertilizers and Petrochemical Corporation Ltd	13645.05

Data Analysis:

Current Ratio:

Year	Coromandel	Fert & Chem	Tata Chemicals	Chambel fert	Deepak Fert
2019-20	1.44	1.1	2.81	1.1	1.15
2020-21	1.96	0.88	2.77	2.06	1.33
2021-22	1.85	0.99	2.52	1.59	1.34
2022-23	1.77	1.09	2.2	1.79	1.28
2023-24	2.1	1.06	1.62	2	1.33
Average	1.824	1.024	2.384	1.708	1.286



According to the above table current ratio of Tata chemicals was highest 2.384 it was good but Fert & Chem current ratio was lowest 1.024 during study period.

Hypothesis Testing

- **H0 =** There is no significant difference between Current Ratio of selected Fertilizer Companies in India during the study period.
- **H1 =** There is a significant difference between Current Ratio of selected Fertilizer Companies in India during the study period.

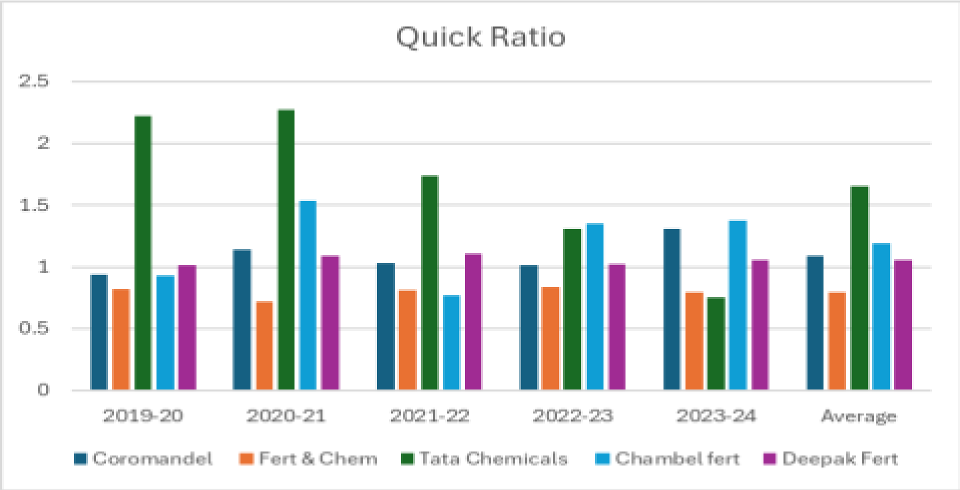
ANOVA Result

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	5.483264	4	1.370816	14.65831177	2.866081402
Within Groups	1.87036	20	0.093518		
Total	7.353624	24			

The above ANOVA table indicate that calculate value of ANOVA test is 14.65 and the critical value (table value) of ANOVA is 2.866 at the 5% level of significance. The F-calculated value is more than the table value, So that Null hypothesis is failed to accept and alternative hypothesis is accepted. Therefore it concluded that there is a significant difference between Current Ratios among the selected Fertilizer companies in India during the study period.

Quick Ratio:

Year	Coromandel	Fert & Chem	Tata Chemicals	Chambel fert	Deepak Fert
2019-20	0.94	0.82	2.22	0.93	1.01
2020-21	1.14	0.72	2.27	1.54	1.09
2021-22	1.03	0.81	1.74	0.77	1.11
2022-23	1.01	0.84	1.31	1.35	1.02
2023-24	1.31	0.79	0.75	1.38	1.06
Average	1.086	0.796	1.658	1.194	1.058



According to the above table Quick ratio of Tata chemicals 1.658 was highest during study period it was good and 0.796 was lowest of Fert & Chem.

Hypothesis Testing

- **H0** = There is no significant difference between Quick Ratio of selected Fertilizer Companies in India during the study period.
- **H1** = There is a significant difference between Quick Ratio of selected Fertilizer Companies in India during the study period.

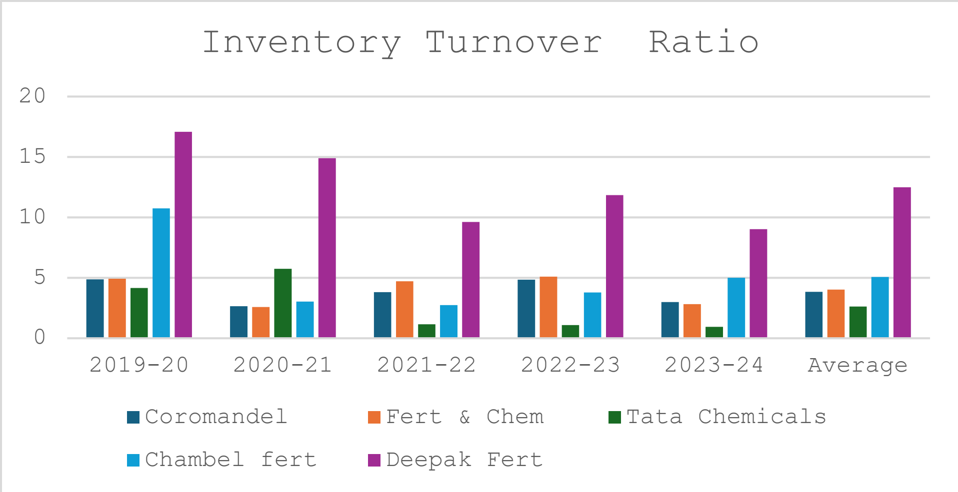
ANOVA Result

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	1.987616	4	0.496904	4.579507124	2.866081402
Within Groups	2.17012	20	0.108506		
Total	4.157736	24			

The above ANOVA table indicate that calculate value of ANOVA test is 4.57 and the critical value (table value) of ANOVA is 2.866 at the 5% level of significance. The F-calculated value is more than the table value, So that Null hypothesis is failed to accept and alternative hypothesis is accepted. Therefore it concluded that there is a significant difference between Quick Ratios among the selected Fertilizer companies in India during the study period.

Inventory Turnover Ratio:

Year	Coromandel	Fert & Chem	Tata Chemicals	Chambel fert	Deepak Fert
2019-20	4.87	4.92	4.16	10.75	17.08
2020-21	2.65	2.58	5.75	3.04	14.9
2021-22	3.81	4.71	1.16	2.74	9.62
2022-23	4.85	5.1	1.09	3.79	11.85
2023-24	3	2.82	0.94	5.01	9.03
Average	3.836	4.026	2.62	5.066	12.496



According to the above table Inventory turnover ratio of Deepak Fert 12.49 was highest during the study period and 2.62 was lowest of Tata chemicals during the study period.

Hypothesis Testing

- **H0** = There is no significant difference between Inventory turnover Ratio of selected Fertilizer Companies in India during the study period.
- **H1** = There is a significant difference between Inventory turnover Ratio of selected Fertilizer Companies in India during the study period.

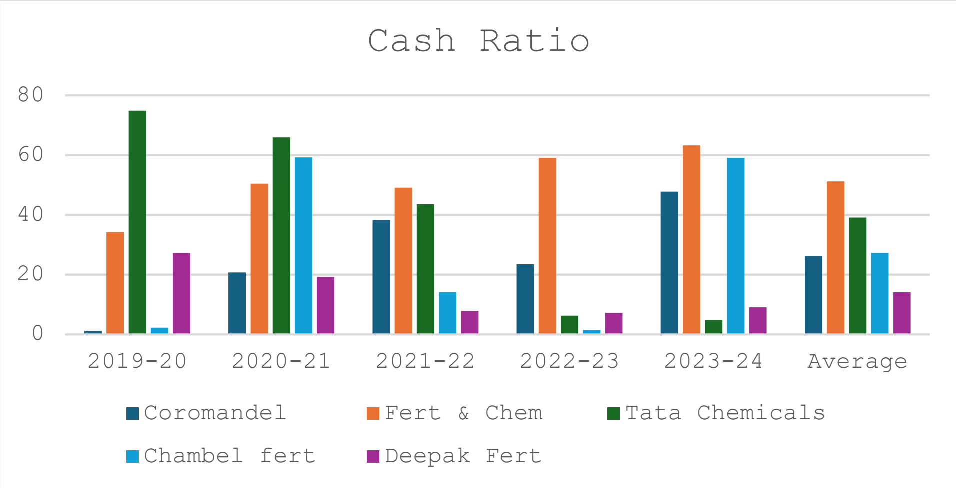
ANOVA Result

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	311.5457	4	77.88644	12.918518	2.86608
Within Groups	120.5810	20	6.029054		
Total	432.1268	24			

The above ANOVA table indicate that calculate value of ANOVA test is 12.91 and the critical value (table value) of ANOVA is 2.866 at the 5% level of significance. The F-calculated value is more than the table value, So that Null hypothesis is failed to accept and alternative hypothesis is accepted. Therefore it concluded that there is a significant difference between Inventory turnover Ratios among the selected Fertilizer companies in India during the study period.

Cash Ratio

Year	Coromandel	Fert & Chem	Tata Chemicals	Chambel fert	Deepak Fert
2019-20	1.12	34.24	74.89	2.26	27.21
2020-21	20.76	50.47	65.96	59.28	19.22
2021-22	38.28	49.13	43.57	14.17	7.83
2022-23	23.47	59.11	6.28	1.47	7.19
2023-24	47.79	63.25	4.85	59.08	9.05
Average	26.284	51.24	39.11	27.252	14.1



According to the above table Cash Ratio of Fert & Chem 51.24 was highest during the study period and 14.1 was lowest of Deepak Fert during the study period.

Hypothesis Testing

- **H0** = There is no significant difference between Cash Ratio of selected Fertilizer Companies in India during the study period.
- **H1** = There is a significant difference between Cash Ratio of selected Fertilizer Companies in India during the study period.

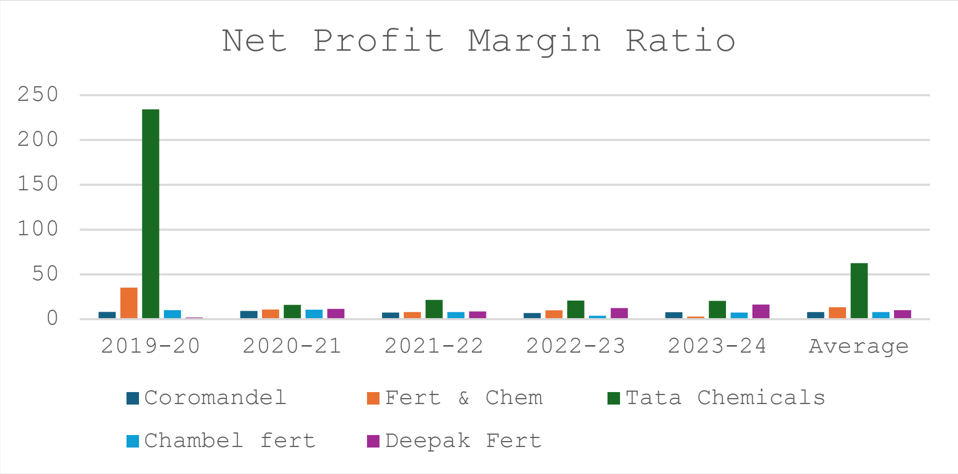
ANOVA Result

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	3977.723104	4	994.430776	2.016939815	2.866081402
Within Groups	9860.7878	20	493.03939		
Total	13838.5109	24			

The above ANOVA table indicate that calculate value of ANOVA test is 2.01 and the critical value (table value) of ANOVA is 2.866 at the 5% level of significance. The F-calculated value is less than the table value, So that Null hypothesis is accepted. Therefore it concluded that there is no significant difference between Cash Ratios among the selected Fertilizer companies in India during the study period.

Net Profit Margin

Year	Coromandel	Fert & Chem	Tata Chemicals	Chambel fert	Deepak Fert
2019-20	8.07	35.21	234.23	10.03	1.79
2020-21	9.27	10.8	15.97	10.59	11.53
2021-22	7.39	7.98	21.54	8.01	8.63
2022-23	6.87	9.88	20.83	3.85	12.39
2023-24	7.8	2.89	20.43	7.41	16.29
Average	7.88	13.352	62.6	7.978	10.126



According to the above table Net Profit Margin Ratio of Tata chemicals 62.6 was highest during the study period and 7.88 was lowest of Coromandel during the study period.

Hypothesis Testing

- **H0** = There is no significant difference between Cash Ratio of selected Fertilizer Companies in India during the study period.
- **H1** = There is a significant difference between Cash Ratio of selected Fertilizer Companies in India during the study period.

ANOVA Result

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Between Groups	11235.62522	4	2808.906306	1.493174543	2.866081402
Within Groups	37623.28148	20	1881.164074		
Total	48858.9067	24			

The above ANOVA table indicate that calculate value of ANOVA test is 1.49 and the critical value (table value) of ANOVA is 2.866 at the 5% level of significance. The F-calculated value is less than the table value, So that Null hypothesis is accepted. Therefore it concluded that there is no significant difference between Net Profit Margin Ratios among the selected Fertilizer companies in India during the study period.

Correction and Regression Analysis

1. Coromandel International Ltd

Year	CR	QR	ITR	CashR	NPM
2019-20	1.44	0.94	4.87	1.12	8.07
2020-21	1.96	1.14	2.65	20.76	9.27
2021-22	1.85	1.03	3.81	38.28	7.39
2022-23	1.77	1.01	4.85	23.47	6.87
2023-24	2.1	1.31	3	47.79	7.8

- **H0** = There is no significant relationship between working capital management ratios and profitability of Coromandel during the study period.
- **H1** = There is significant relationship between working capital management ratios and profitability of Coromandel during the study period.

	CR	*QR*	*ITR*	*CashR*
NPM	0.152319603	0.257340482	-0.649928047	-0.267749293

According to the result null hypothesis is accepted, There is no significant relationship between working capital management ratios and profitability of Coromandel during the study period.

- **H0** = There is no significant impact of working capital management ratios on profitability of Coromandel during the study period.
- **H1** = There is significant impact of working capital management ratios on profitability of Coromandel during the study period

Regression Statistics	
R Square	0.98
Significant F	0.11

According to the result significant f 0.11 is more than p value 0.05 so our null hypothesis is accepted, There is no significant impact of working capital management ratios on profitability of Coromandel during the study period.

2. Fertilizers and Chemical Travancore Ltd

Year	CR	QR	ITR	CashR	NPM
2019-20	1.1	0.82	4.92	34.24	35.21
2020-21	0.88	0.72	2.58	50.47	10.8
2021-22	0.99	0.81	4.71	49.13	7.98
2022-23	1.09	0.84	5.1	59.11	9.88
2023-24	1.06	0.79	2.82	63.25	2.89

- **H0** = There is no significant relationship between working capital management ratios and profitability of Fert and Chem during the study period.
- **H1** = There is significant relationship between working capital management ratios and profitability of Fert and Chem during the study period.

	CR	*QR*	*ITR*	*CashR*
NPM	0.349	0.237	0.462	-0.902

According to the result null hypothesis is accepted, There is no significant relationship between working capital management ratios and profitability of Fert and chem during the study period.

- **H0 =** There is no significant impact of working capital management ratios on profitability of Fert and Chem during the study period.
- **H1** = There is significant impact of working capital management ratios on profitability of Fert and Chem during the study period

Regression Statistics	
R Square	0.72
Significant F	0.49

According to the result significant f 0.49 is more than p value 0.05 so our null hypothesis is accepted, There is no significant impact of working capital management ratios on profitability of Coromandel during the study period.

3. Tata Chemicals Ltd

Year	CR	QR	ITR	CashR	NPM
2019-20	2.81	2.22	4.16	74.89	234.23
2020-21	2.77	2.27	5.75	65.96	15.97
2021-22	2.52	1.74	1.16	43.57	21.54
2022-23	2.2	1.31	1.09	6.28	20.83
2023-24	1.62	0.75	0.94	4.85	20.43

- **H0** = There is no significant relationship between working capital management ratios and profitability of Tata chemicals during the study period.
- **H1** = There is significant relationship between working capital management ratios and profitability of Tata chemicals during the study period.

	CR	*QR*	*ITR*	*CashR*
NPM	0.47	0.47	0.36	0.59

According to the result null hypothesis is accepted, There is no significant relationship between working capital management ratios and profitability of Tata chemicals during the study period.

- **H0 =** There is no significant impact of working capital management ratios on profitability of Tata chemicals during the study period.
- **H1** = There is significant impact of working capital management ratios on profitability of Tata chemicals during the study period

Regression Statistics	
R Square	0.49
Significant F	0.69

According to the result significant f 0.69 is more than p value 0.05 so our null hypothesis is accepted, There is no significant impact of working capital management ratios on profitability of Tata chemicals during the study period.

4. Chambal Fertilizers and Chemicals Ltd

Year	CR	QR	ITR	CashR	NPM
2019-20	1.1	0.93	10.75	2.26	10.03
2020-21	2.06	1.54	3.04	59.28	10.59
2021-22	1.59	0.77	2.74	14.17	8.01
2022-23	1.79	1.35	3.79	1.47	3.85
2023-24	2	1.38	5.01	59.08	7.41

- **H0 =** There is no significant relationship between working capital management ratios and profitability of Chambal Fertilizers during the study period.
- **H1** = There is significant relationship between working capital management ratios and profitability of Chambal Fertilizers during the study period.

	CR	*QR*	*ITR*	*CashR*
NPM	-0.20	-0.11	0.33	0.38

According to the result null hypothesis is accepted, There is no significant relationship between working capital management ratios and profitability of Chambal Fertilizers during the study period.

- **H0 =** There is no significant impact of working capital management ratios on profitability of Chambal Fertilizers during the study period.
- **H1** = There is significant impact of working capital management ratios on profitability of Chambal Fertilizers during the study period

Regression Statistics	
R Square	0.93
Significant F	0.23

According to the result significant f 0.23 is more than p value 0.05 so our null hypothesis is accepted, There is no significant impact of working capital management ratios on profitability of Chambal Fertilizers during the study period.

5. Deepak Fertilizers and Petrochemical Corporation Ltd

Year	CR	QR	ITR	CashR	NPM
2019-20	1.15	1.01	17.08	27.21	1.79
2020-21	1.33	1.09	14.9	19.22	11.53
2021-22	1.34	1.11	9.62	7.83	8.63
2022-23	1.28	1.02	11.85	7.19	12.39
2023-24	1.33	1.06	9.03	9.05	16.29

- **H0** = There is no significant relationship between working capital management ratios and profitability of Deepak Fertilizers during the study period.
- **H1** = There is significant relationship between working capital management ratios and profitability of Deepak Fertilizers during the study period.

	CR	*QR*	*ITR*	*CashR*
NPM	0.79	0.34	-0.73	-0.71

According to the result null hypothesis is failed to accept., There is a significant relationship between working capital management ratios and profitability of Deepak Fertilizers during the study period.

- **H0** = There is no significant impact of working capital management ratios on profitability of Deepak Fertilizers during the study period.
- **H1** = There is significant impact of working capital management ratios on profitability of Deepak Fertilizers during the study period

Regression Statistics	
R Square	0.98
Significant F	0.09

According to the result significant f 0.09 is more than p value 0.05 so our null hypothesis is accepted, There is no significant impact of working capital management ratios on profitability of Deepak Fertilizers during the study period.

Findings

According to the study researcher had concluded that

- There is a significant difference between Working Capital Management Ratios and NPM of selected Fertilizer companies during the study period.

- There is no significant relationship between Working Capital Management Ratios and NPM of selected Fertilizer companies during the study period.
- There is no significant impact of Working Capital Management Ratios on Net Profit Margin of selected Fertilizer companies during the study period.

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