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Financial Performance During Covid-19: A Financial Ratio-Based Comparison of Multinational and Local Pharmaceutical Companies in Pakistan

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Keywords:
Liquidity ratio,
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Covid-19,
Cash flow.

ABSTRACT

Financial-ratio analysis from financial statement is a key tool used in the evaluation of financial performance of companies. Financial ratios included liquidity-ratio, efficiency-ratio and profitability-ratio. Liquidity-ratio show the ability of company to repay long and short-term financial liabilities; efficiency-ratio explains the ability of the company how to utilize assets and resources while profitability-ratio measures the company ability to generate income. Current study assessed how Multinational and local pharmaceutical Companies in Pakistan managed financial performance by using financial-ratios from 2016 to 2023, covering pre-pandemic, during-pandemic and post-pandemic periods. The secondary data was collected by company's financial statements of twelve Pakistan Stock Exchange registered Multinational-pharmaceutical-companies (MPC) and national-pharmaceutical-companies (NPC). The findings of the study revealed that MPC had stronger liquidity position with an average (current-ratio MPC:2.23 vs. NPC:1.46) but faced declining cash reserves post-pandemic. Efficiency-ratio suggested that MPC (10.42 days) managed receivables more efficiently compared to NPC (32.92 days) and had shorter inventory holding periods for average of MPC (84 days) compared to NPC (116 days). However, both companies experienced post-pandemic payment delays; therefore account-payable turnover-ratio adversely affected. NPC maintained higher profit margins (NPC:19.92% vs. MPC:9.33%), while MPC offered superior investor returns during COVID (31.50%). Overall, MPC improved gross/net-profit-ratio and return-on-asset-ratio effectively during the crisis, whereas NPC sustained with stable profitability-ratio and improved liquidity-ratio. Hence, MPC firms exhibited better financial management practices, while NPC firms faced challenges, particularly in liquidity and cash-flow management. The post-COVID period proved to be the most difficult for both groups.

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INTRODUCTION

The main goal of any business is to increase shareholder wealth, which drives its strategies and decisions. However, businesses often encounter challenges that make growth and sustainability difficult in today's competitive market. A company's success largely depends on how well it manages its financial performance, as this is a key to staying competitive and achieving long-term success.(Brigham & Houston, 2020) Financial challenges and circumstances of any company can be determined by their financial statements. According to (Tuzcuoğlu, 2020); the company's financial performance is a critical factor in evaluating its financial health, which can be measured through the analysis of financial ratios. The most commonly used financial ratios are liquidity ratio, efficiency ratio and profitability ratio (Rashid, 2021); among which liquidity-ratio show the ability of company to repay long and short-term financial liabilities (Hasidi et al., 2024), efficiency-ratio explains the ability of the company how to utilize assets and resources (Hawaldar et al., 2022) while profitability-ratio measures the company ability to generate income.(Hasidi et al.,, 2024) Reports of these ratios offer detailed insights into financial activities over a specific period and are essential for assessing strategies for future growth. As noted by (Brigham & Houston, 2020) that these analyses enable managers to assess whether the company is in sound financial health or encountering challenges.

The COVID-19 pandemic and the subsequent lockdowns had significantly affected economies worldwide, intensifying uncertainty within the business sector (Bhattacharyya & Thakre, 2021).Further it upsets all the business operations, productions, expansions and profitability of almost all industries including pharmaceuticals.(Achim et al., 2022) The pharmaceutical sector including both local and multinational companies faced several significant problems during the COVID-19 pandemic. Liquidity became a major issue as companies struggled with cash flow problems due to increased costs and delays in payments during pandemic.(Ramli & Yekini, 2022) In economic disastrous circumstances, the performance and survival of any organization largely depends upon proper and timely management of cash, accounts receivable, inventory and account payable, which influence financial ratios.(Ren et al., 2019; Simon et al., 2021) Tremendous amount of research work has been done on management of cash, accounts receivable, inventory and account payable and profitability in the normal economic conditions to determine and evaluate financial ratios; unfortunately, studies are very limited pertaining to management during economic crisis of Covid-19.(Olowookere et al., 2021)

The Operating efficiency of both multinational pharmaceutical companies (MPCs) and national pharmaceutical companies (NPCs) were affected as the companies had to quickly adapt to disruptions in supply chains, increased production costs and new health and safety rules. Both NPCs and MPCs observed their profitability squeezed due to higher costs, price controls, and increased competition. These challenges highlighted the need for better financial management, operational adjustments, and strategic planning to keep financial ratios stable in during such extraordinary disruptions. How the pharmaceutical firms responded and managed their cash flow, accounts receivable, inventory and account payable at the time of crises? The decisions usually taken by the finance mangers are worthy and helpful to enhance the stability of financial ratios.(Lerner & Nanda, 2020)

Unfortunately, studies are very limited pertaining to management of capital during economic crisis like Covid-19.(Olowookere et al.,, 2021) The Pharmaceutical industry dealt with the large volume of raw materials, work in process and finished goods inventories and mostly payments and receipts transactions are made on credit basis. The Covid-19 has also affected the pharmaceutical sector of Pakistan like other sectors of the economy. Therefore, it was worth-full to examine what was financial performance in such economic crises. Pharmaceutical industries play an important role in the economic development and social welfare of any country. A large population of Pakistan mainly depends on pharmaceutical industry for their employment and jobs. How the pharmaceutical firms responded and managed their working capital at the time of crises to stabilize their financial ratios? The decisions usually taken by the finance mangers and are worthy and helpful to enhance the profitability.(Lerner & Nanda, 2020)

Research Questions

1. How did the financial performance of MPC and NPC companies in Pakistan change during the COVID-19 pandemic?
2. What are the key differences in financial ratios (e.g., profitability, liquidity, solvency) between multinational and local pharmaceutical companies during COVID-19?

Objective of study

In order to get the answers of these questions pertaining to pharmaceutical companies; the main goal of the current study was to determine that how pharmaceutical companies in Pakistan, both multinational and local dealt with challenges related to liquidity, operations, and profitability during the pandemic of COVID-19. Compares their performance before, during, and after COVID-19 for the period of 2017 to 2023 and examines the strategies they used to stay financially stable and kept financial ratios stable in uncertain times.

LITERATURE REVIEW

Financial performance

Financial performance means the financial health of the business. It is a measure of how well a company is managing its resources and achieving its financial goals. According to Kyere et al. (Kyere & Ausloos, 2021) financial performance refers to the ability of a company to generate profits and increase shareholder value over time. Proper financial management is the key determinant of companies' financial performance, the profitability of company, adequacy of capital and liquidity are the main parameters needs to be considered for analysis during current and previous tears.(Sihombing et al., 2022) No only current performance can be evaluated by financial management but it can also help in forecasting for the future and planning of organization goals.

Financial statements:

A financial statement is a report that shows the financial activities and performance of a business for certain period of time. It is used by lenders and investors to check a business's financial health and earnings potential. The major objective of financial statements explained by Rini et al. (Rini, 2020) is that it provides useful information to the management of the company for the purpose of planning, controlling, analyzing, and decision making.Finally, they serve as a basis for evaluating the entity's financial health, assessing its profitability, solvency, and liquidity, and identifying trends or patterns that can inform future decision-making.

Financial ratios analysis

Financial ratio can be determined from financial statement of the company, which shows the picture of financial performance. Financial statement can explain the operational efficiency, liquidity, profitability and solvency of the company with the help of financial ratio.(Olayinka, 2022) These financial ratios helps in determining companies business compared with other businesses, what are the benchmarks of the company and over time changes in financial outcomes.(Olayinka, 2022) Two different group of accounts are compared by financial ratios, grouping are necessary to make to get more specific information. Olayinka et al. (Olayinka, 2022) clearly mentioned that financial ratios indicates company's financial performance and this performance cannot be possible to determined without financial statements".

Financial ratios categories

Liquidity Ratio

Poliakov et al. (Poliakov & Zayukov, 2023) defines it as the timely accomplishment of short term obligations of a company. Effiong et al. (Effiong & Ejabu, 2020) further explain the

ratio that shows the company's ability to pay short-term liabilities, While Blessing et al. (Blessing & Sakouvogui, 2023) states that liquidity serves as a key metric for assessing financial performance, primarily measured through the current ratio and quick ratio as calculated by following formulae:-

1. Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$
2. Quick Ratio = $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$

Profitability ratio

Relative to assets, equity and sales the company generate profits, the measurement of these profits are profitability ratios. According to Poliakov et al.(Poliakov & Zayukov, 2023) overall management with efficiency are essential components of the profitability ratio calculations, it also compares investment size with the volume of profits. Current study focused on net profit, gross profit and return on assets as profitability ratio analysis parameters. According to Ledley et al. (Ledley et al., 2020), gross profit measures how much profit a company generates form its sales of goods and services. A higher gross profit is a positive indication that the company can cover operating expenses. The net profit of the company can be determined by net profit after tax on sales. The company's operations are better if the margins of net profits are high. According toSunaryo et al. (Sunaryo, 2020) 20% net profit margin is considered is standard for any company's performance. Return on assets is a tool used by managers and financial analysts to determine how effectively a company is using its resources to make a profit. Profitability ratios formulae are:-

1. Net Profit ratio = $\frac{\text{Net Profit}}{\text{Net sale}}$
2. Gross Profit ratio = $\frac{\text{Gross Profit}}{\text{Net sale}}$
3. Return On Assets = $\frac{\text{Net Profit}}{\text{Total Assets}}$

Activity/Efficiency ratio

Activity ratio is financial metrics that are used to evaluate the efficiency of a company's operations. The source funds of companies are imperative and their effective use is crucial, use of course fund effectively can be determined by activity ratio.(Sari et al., 2022) Comparison of different elements of assets and sales are expressed by activity ratio.It evaluates the management's effectiveness in utilizing resources like inventory, accounts receivable, account payable and fixed assets. Inventory turnover measures that how often inventory is sold and replaced over a period. The efficiency of the company for the collection of receivable can be showed by accounts receivable turnover ratio, while asset turnover ratio

shows how efficiently a company uses its assets to generate sales; common activity ratios included are:-

1. Account Receivable Turnover = $\frac{\text{Net credit sales}}{\text{Average A/c Receivable}}$
2. Inventory Turnover = $\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$
3. Account payable Turnover = $\frac{\text{Cost of Goods Sold}}{\text{Average payable}}$
4. Assets turnover ratio = $\frac{\text{Net Sales}}{\text{Total Assets}}$
5. Cash Conversion cycle = Receivable turnover in days + INV turnover in days – Payable turnover in days

METHODOLOGY

Design of research

This study used a cross-sectional survey; quantitative data was collected and describe qualitatively. These types of research used in management and other sciences to make specific conclusions.(Siedlecki, 2020).

Study duration: January 2016 to December 2023.

Data source: Secondary data was obtained of the companies, particularly financial statements for the duration of January 2016 to December 2023.

Place of study: Karachi, Pakistan

Target population: Multinational pharmaceutical companies (MPC) and national pharmaceutical companies (NPC) located in Pakistan

Data Collection method

This study employs secondary data, comprising financial statements and key financial indicators of pharmaceutical companies listed in the Pakistan Stock Exchange (PSX). The data is obtained from the annual reports of selected firms over an eight-year period (2016–2023) on a yearly basis. The analysis is structured into three distinct time-frames: a four year pre-COVID period (2016–2019), a two-year COVID-19 period (2020–2021), and a two-year post-COVID period (2022–2023). This categorization facilitates a comparative assessment of financial performance across different economic conditions. Data sources included the official websites of pharmaceutical companies, publicly available annual and quarterly reports, and the Pakistan Stock Exchange. The collected data was verified by the websites of the companies; which are available in the form of annual reports and also from the PSE (Pakistan Stock Exchange). Total registered pharmaceutical companies at PSE are twelve; among which five are MPC and seven are NPC. The extraction of financial figures is conducted in alignment with predefined variables, utilizing ratios, fractions, or percentages where appropriate. The data was analyzed using various financial formulas to determine key

ratios and assess the actual financial condition of the companies. Liquidity, activity and profitability ratios were calculated for the given time periods. Finally, conclusions and recommendations were provided based on the findings

Inclusion criteria

Multinational Pharmaceutical companies and National Pharmaceutical companies listed in PSE (Pakistan Stock Exchange).

Exclusion criteria

All those Multinational and National Pharmaceutical companies not listed in PSE (Pakistan Stock Exchange). The companies data, which cannot be verified by any source.

RESULTS AND DISCUSSION

Covid-19 resulted in many economic challenges and these challenges are also faced pharmaceutical and other industries of Pakistan and other countries. The main challenges faced by these companies included operational, managerial, structural constraints, sustaining business and profitability, and supply chain distortion.(Hussain et al., 2021)

Liquidity ratio

The company's ability to pay their short term debts can be determined by liquidity ratio.(Blessing & Sakouvogui, 2023) The current study used three different types of liquidity ratio to assess the debt paying ability of the MPC and NPC. The calculation of the liquidity ratios is presented in table 1. For interpretation in general; if value of ratio is greater than 1.00, it means company has the ability to pay their liabilities and having higher liquidity ratio. One way ANOVA revealed no significant differences in the liquidity ratios of pre, during and post Covid-19 periods except for cash ratio ($p=0.005$) of NPC.

Based on the data analysis mentioned in table 1; current ratios, quick ratio and cash ratio of MPC seem to be good during in the year 2016 to 2023 as the company had the enough amount of current assets to settle their short-term dues. However, the ratio is slightly improved in 2020 versus previous year but sharp declined in the period of covid-19 versus before covid-19, perhaps it is mainly on account of higher level of inventory and increase in current liabilities. In contrast by analyzing the liquidity ratio of NPC, it has shown weak liquidity position in year 2016 to 2021, therefore the company has not enough amount of current liabilities to settle their short- term debts. Based upon analysis from table 1, it is very evident that MPC liquidity ratio was better than NPC. The another study conducted by Yusneny et al. also supported the financial performance of the company by determining liquidity ratio, quick ratio and current ratio and found companies good financial performance from 2016 to 2020.(Nasution & Yusleny, 2023)

Table – 1: Liquidity ratio – 2016 – 2023

Period	Year	Current Ratio		Quick Ratio		Cash Ratio	
		MPC*	NPC**	MPC*	NPC**	MPC*	NPC**
Pre-Covid-19	2016	4.61	0.86	3.35	0.60	2.79	0.25
	2017	3.48	1.27	2.60	0.75	2.18	0.02
	2018	2.18	1.39	1.44	0.80	0.95	0.02
	2019	2.13	1.64	1.09	0.89	0.48	0.09
	Average	**3.10**	**1.29**	**2.12**	**0.76**	**1.60**	**0.10**
During Covid-19	2020	2.30	1.71	1.57	0.92	1.10	0.25
	2021	1.97	1.65	1.25	0.95	0.92	0.34
	Average	**2.14**	**1.68**	**1.41**	**0.94**	**1.01**	**0.30**
Post-Covid-19	2022	1.49	1.50	0.91	0.73	0.60	(0.28)
	2023	1.38	1.29	0.62	0.65	0.30	(0.22)
	Average	**1.44**	**1.40**	**0.77**	**0.69**	**0.45**	**-0.25**
Oneway ANOVA	p-value***	0.195	0.311	0.244	0.116	0.349	0.005

*MPC=Multinational Pharmaceutical Company; **NPC=National Pharmaceutical Company;
***p-value is significant <0.05

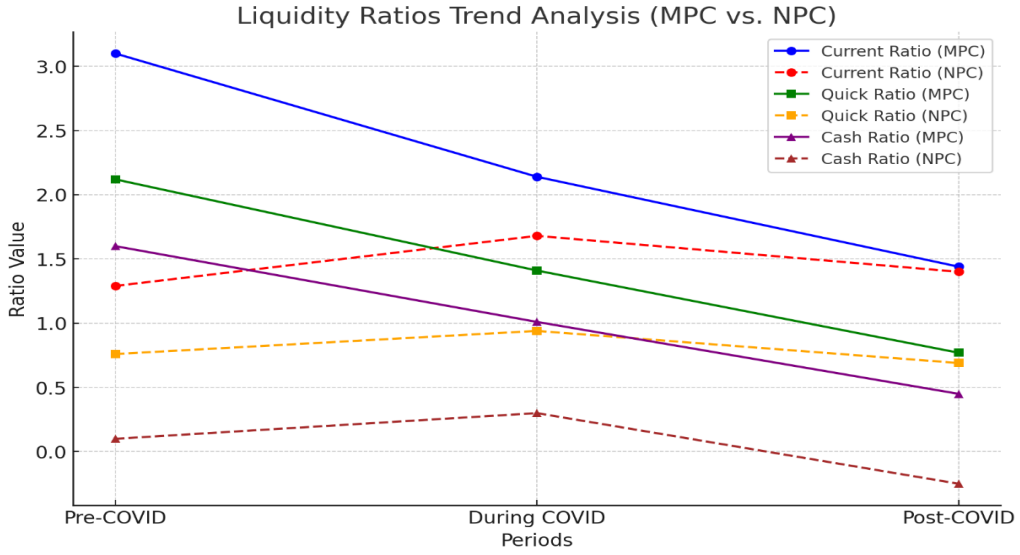

Figure 1: Current Ratio, Quick Ratio, and Cash Ratio of MPC and NPC over time.

The line chart above, displaying current ratio, quick ratio, and cash ratio and shows a declining liquidity trend for both MPC and NPC firms over time. (Figure 1) Below is a detailed analysis based on pre-COVID, during COVID, and post-COVID trends.

Pre-COVID Period (2016-2019): MPC firms had strong liquidity with a high current ratio (3.1), indicating sufficient short-term assets to cover liabilities. Their quick ratio (2.12) and cash ratio (1.6) further reflected financial stability with ample cash reserves. In contrast, NPC firms had a much lower current ratio (1.29) and quick ratio (0.76), suggesting a difficult liquidity position. Their cash ratio (0.1) indicated a heavy reliance on non-cash assets for liquidity.

During COVID (2020-2021): Both MPC and NPC firms faced liquidity challenges. MPC firms experienced a decline in their current ratio (2.14) and quick ratio (1.41), as their ability to meet short-term obligations has become weakened. However, their cash ratio (1.01) remained relatively stable, ensuring some financial buffer. Surprisingly, NPC firms saw a slight improvement in liquidity, with their current ratio rising to 1.68 and quick ratio increasing to 0.94. Their cash ratio (0.3) also improved, suggesting they adopted a more cautious approach to managing liquid assets during economic uncertainty.

Post-COVID (2022-2023): Liquidity levels declined sharply, particularly for MPC firms. Their current ratio dropped to 1.44, indicating struggles in covering short-term liabilities. The quick ratio (0.77) also fell significantly, reflecting increased liquidity constraints. The most alarming decline was in their cash ratio (0.45), showing a depletion of cash reserves. NPC firms, while maintainied some stability in their current ratio (1.4), faced a severe liquidity crisis. Their cash ratio turned negative (-0.25), suggesting an extreme shortage of cash, which could signal financial distress.

Efficiency/Activity ratio

Efficiency ratios are also called activity ratios or turnover ratio which measures the company ability to use its assets and resources to generate profit.(Sari et al.,, 2022) Efficiency ratios are important indicators of a company's financial health and are often used by investors and analysts to assess a company's operating performance and potential for growth.(Chen & Srinivasan, 2024)In efficiency ratio analysis by ANOVA, significance in between pre, during and post Civid-19 period were noted number of days receivable of MPC (p=0.018) and number of days in accounts payable in MPC (p=0.045), all other parameters were non-significant for both MPC and NPC. The calculation an interpretation of the efficiency ratios are presented in table 2.

MPCs had a satisfactory collection policy, reducing their receivable collection period from 12 days pre-COVID to 9 days during and after the pandemic. In contrast, NPCs saw an increase from 30 days pre-COVID to 35 days during the pandemic. Another study in Vietnam also support the findings of NPC, where the collection of receivable was decreased due to Covid-19.(Nguyen, 2022)

MPCs' inventory turnover rose from 81 to 86 days during COVID-19, then improved to 85 days post-COVID. NPCs' turnover increased from 114 to 128 days during COVID-19, later improving to 106 days. Similar trends were seen in Chinese firms(Zhang & Zheng, 2022a)

Table – 2: Efficiency Ratio - 2016 to 2023

Period	Year	No of days in Receivable		No of days in Inventory		No of days in accounts Payable		Cash Conversion Cycle	
		MPC*	NPC**	MPC*	NPC**	MPC*	NPC**	MPC*	NPC**
Pre-Covid	2016	11	27	85	98	56	113	40	12
	2017	13	31	80	117	61	143	32	5
	2018	13	32	72	114	77	114	8	32
	2019	12	29	88	127	83	106	18	50
	Average	**12.25**	**29.75**	**81.25**	**114.00**	**69.25**	**119.00**	**24.50**	**24.75**
During - Covid	2020	10	32	87	130	78	100	19	62
	2021	9	37	86	126	92	105	3	58
	Average	**9.5**	**34.5**	**86.5**	**128**	**85**	**102.5**	**11**	**60**
Post-Covid	2022	9	35	81	108	99	97	(9)	46
	2023	10	34	89	104	106	97	(7)	41
	Average	**9.5**	**34.5**	**85**	**106**	**102.5**	**97**	**-8**	**43.5**
One way ANOVA	p-value***	0.018	0.089	0.586	0.154	0.045	0.190	0.069	0.116

*MPC=Multinational Pharmaceutical Company; **NPC=National Pharmaceutical Company;
***p-value is significant <0.05

Another parameter of financial performance was accounts payable.(Dhiaf et al., 2024). MPC accounts payable turnover increased from 69 days pre-COVID to 85 days during and 102 days post-COVID. NPCs improved from 119 to 102 days during COVID-19, then slightly reduced to 97 days post-COVID. A study in Kenya found a negative link between payment periods and financial performance(Wanzala & Obokoh, 2024),but Pakistani pharmaceutical firms were less affected by COVID-19.

MPC cash conversion cycle improved from 25 days pre-COVID to 11 days during but turned negative post-COVID due to higher inventory turnover. NPCs worsened from 25 to 60 days during COVID-19 but improved to 44 days post-COVID. Same financial circumstances were faced by Indian firms after the covid-19 and companies suffered a lot due to lack of working capital funds for day to day operations.(Pant et al., 2024)

The efficiency ratios including receivable days, inventory days, payable days, and Cash Conversion Cycle (CCC) are highlighted that how efficiently MPC and NPC firms managed their working capital across pre-COVID, during COVID, and post-COVID periods.(Figure 2)

Pre-COVID (2016-2019): MPC firms maintained receivable days at 12.25, meaning they collected payments quickly, while NPC firms took 29.75 days, indicating slower collections. Inventory days were also higher (114) for NPC firms compared to MPC firms (81.25), suggesting that MPC firms managed inventory more efficiently. Payable days were higher (119) for NPC firms than MPC firms (69.25), indicating that NPC firms delayed payments longer. Consequently, the CCC for MPC firms was 24.5 days, showing a shorter working

capital cycle, whereas NPC firms had a CCC of 24.75 days, reflecting a similar cycle but with reliance on extended payables.

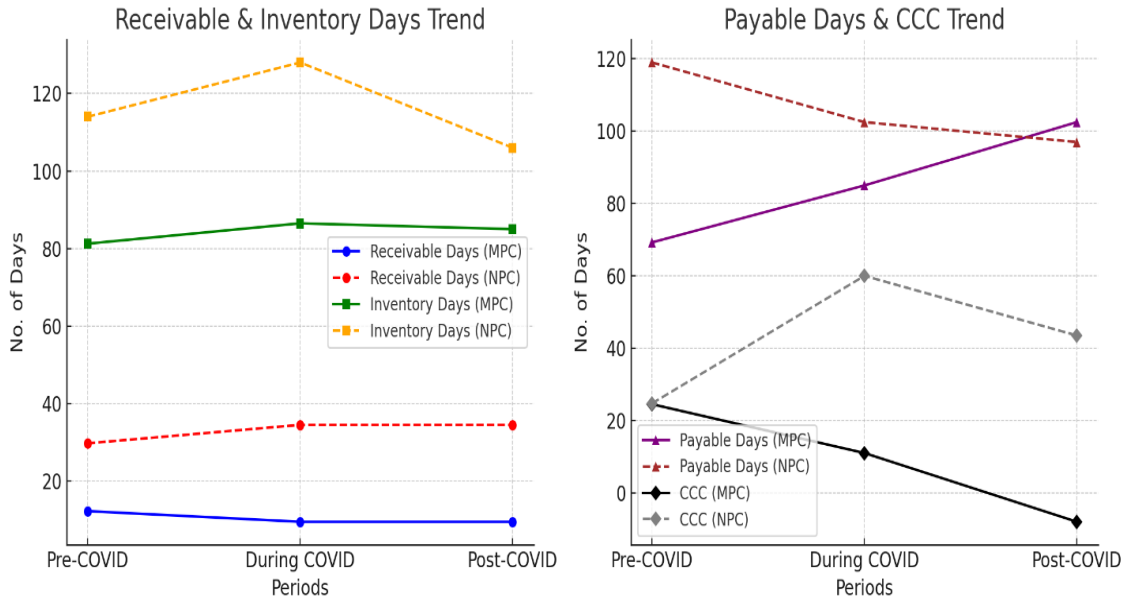

Figure 2: Receivable days, inventory days, payable days, and Cash Conversion Cycle (CCC) of MPC and NPC across pre-COVID, during COVID, and post-COVID periods

During COVID (2020-2021): Both groups experienced changes in efficiency. MPC firms reduced their receivable days 9.5, collecting payments faster, while NPC firms' receivable days increased to 34.5, suggesting delayed collections. Inventory days increased slightly for both groups (MPC: 86.5, NPC: 128), likely due to supply chain disruptions. Payable days for MPC firms increased to 85, showing they took longer to clear supplier dues, while NPC firms' payable period decreased to 102.5, indicating a tighter cash flow. The CCC for MPC firms dropped to 11 days, reflecting improved cash flow management, while NPC firms' CCC surged to 60 days, highlighting a struggle to convert inventory into cash.

Post-COVID (2022-2023): Efficiency ratios worsened, particularly for NPC firms. MPC firms maintained receivable days at 9.5, while NPC firms stabilized at 34.5 days. Inventory days dropped for both groups (MPC: 85, NPC: 106), indicating faster inventory turnover post-pandemic. However, payable days for MPC firms increased significantly to 102.5, meaning they relied on delayed payments, while NPC firms kept payable days at 97. The CCC for MPC firms turned negative (-8 days), indicating they were financing operations through payables rather than cash, while NPC firms' CCC declined to 43.5 days, but still showed inefficiencies in cash flow management. Overall, MPC firms had better efficiency pre-COVID, improved during COVID, and optimized their CCC post-COVID, whereas NPC firms faced worsening efficiency, particularly in cash flow management.

Profitability ratio

Profitability ratio is very important financial metrics for the overall evaluation of the business performance.(Syriopoulos et al., 2022) This ratio further shows that how well the company is able to make a profit from their operations.

Table 3 shows that the average % gross and net profit of both MPCs and NPCs declined during and post-COVID-19, while % return on assets increased. Similarly, % return on equity showed some improvement during COVID-19 but declined post-pandemic. ANOVA results indicate significant changes in NPCs' profitability ratios—gross profit (p=0.011), net profit (p=0.004), return on assets (p=0.026), and return on equity (p=0.030)—while MPCs showed no significant differences. The results of chinese study are consistent with the findings of current study, where declining trend was noted of prifitability ratio of chinese listed companies.(Zhang & Zheng, 2022b)

Table – 3: Profitability Ratio - 2016 to 2023

Period	Year	%Gross Profit ratio		%Net Profit ratio		%Return on asset		%Return on equity	
		MPC*	**NPC****	**MPC***	**NPC****	**MPC***	**NPC****	**MPC***	**NPC****
Pre-Covid	2016	40	58	17	26	23	13	28	25
	2017	39	61	16	26	22	14	29	22
	2018	33	57	9	22	13	13	20	19
	2019	28	59	4	23	6	15	10	19
	Average	**35**	**58.75**	**11.5**	**24.25**	**16**	**13.75**	**21.75**	**21.25**
During-Covid	2020	34	56	13	23	18	16	29	19
	2021	38	55	14	21	21	14	34	16
	Average	**36**	**55.5**	**13.5**	**22**	**19.5**	**15**	**31.5**	**17.5**
Post-Covid	2022	29	51	6	14	9	11	18	14
	2023	21	44	0	9	1	7	1	11
	Average	**25**	**47.5**	**3**	**11.5**	**5**	**9**	**9.5**	**12.5**
One way ANOVA	p-value***	0.138	0.011	0.177	0.004	0.169	0.026	0.132	0.030

*MPC=Multinational Pharmaceutical Company; **NPC=National Pharmaceutical Company;
***p-value is significant <0.05

The profitability ratios including Gross Profit, Net Profit, Return on Assets (ROA), and Return on Equity (ROE) are highlighted that how efficiently MPC and NPC firms managed their resources to generate profits across the pre-COVID, during COVID, and post-COVID periods.(Figure 3)

Pre-COVID (2016-2019): NPC firms consistently had a higher Gross Profit (58%) than MPC firms (35%), indicating stronger pricing power and higher markups. Similarly, NPC firms maintained a Net Profit of 24%, significantly higher than MPC firms 11.5%, showing better cost management. However, MPC firms had a stronger ROA (16%) compared to NPC firms

(13.75%), reflecting better asset utilization. ROE was almost the same for both firms (~21%), indicating balanced returns to investors.

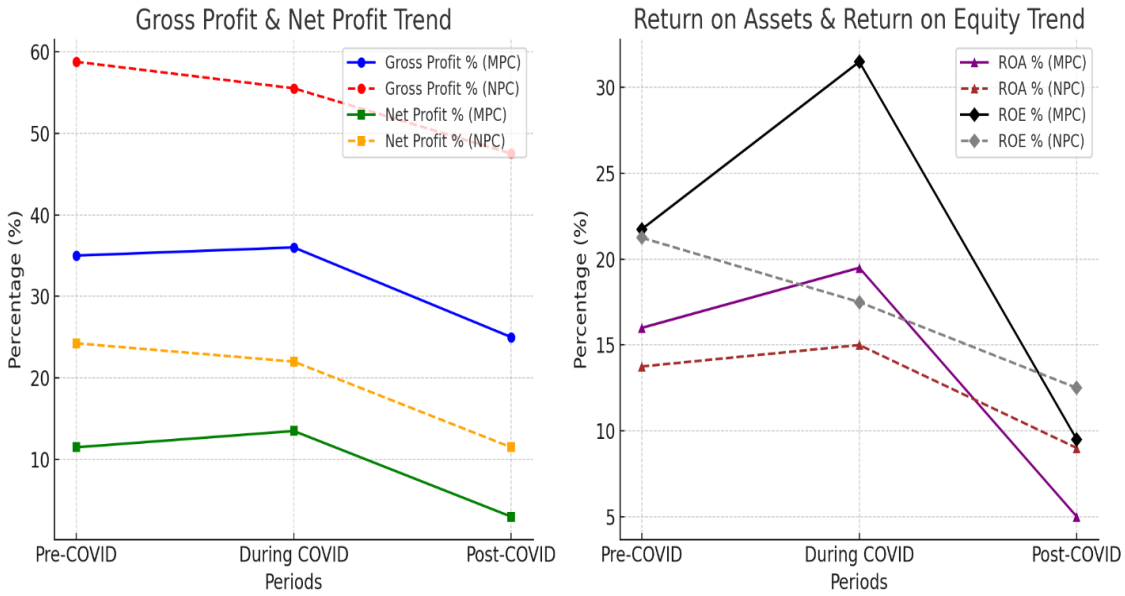

Figure 3: Profitability ratios, including Gross Profit, Net Profit, Return on Assets (ROA), and Return on Equity (ROE) of MPC and NPC firms

During COVID (2020-2021): Both MPC and NPC firms saw relatively stable gross profit margins, with a slight improvement for MPC firms. However, NPC firms continued to have a higher profit percentage. Net Profit also followed a similar trend, with a slight increase for MPC firms, possibly due to the rising demand for pharmaceuticals. There was a notable improvement in both ROA and ROE for MPC firms, with MPC's ROE spiked to 31.5%, showing increased profitability during the pandemic. This was likely driven by increased demand for pharmaceutical products. NPC firms, however, maintained a moderate increase in ROA and ROE.

Post-COVID (2022-2023): A sharp decline in profitability was observed in both groups. The Gross Profit of NPC firms dropped to ~47.5%, while MPC firms saw a more significant decline to ~25%. Net Profit also fell significantly for both, with MPC firms nearly reaching zero, indicating reduced efficiency and profitability in the post-pandemic period. ROA and ROE declined notably, with MPC firms' ROE dropping drastically to 9.5%, while NPC firms saw a decline from 17.5% to 12.5%. This suggests a post-pandemic slowdown, likely due to decreased demand, rising operational costs, or regulatory challenges.

CONCLUSION

The analysis highlights significant differences in financial performance between Multi Pharmaceutical Companies (MPC) and National Pharmaceutical Companies (NPC) across different time periods.

- ***Liquidity:*** MPC firms had strong liquidity before COVID but struggled post-pandemic, while NPC firms, despite consistently weaker liquidity, maintained relative stability. Both groups faced cash shortages post-COVID, with NPC firms experiencing a crisis.
- ***Activity Efficiency:*** MPC firms demonstrated better receivables and inventory management, leading to improved efficiency in cash flow. NPC firms, on the other hand, faced slow collections, longer stockholding periods, and delays in payments, which worsened their financial flexibility.
- ***Profitability:*** NPC firms maintained higher profit margins due to effective pricing strategies, while MPC firms excelled in operational efficiency (ROA) and investor returns (ROE), particularly during COVID. However, post-pandemic, profitability declined across both groups, with MPC firms facing a sharper downturn.

Overall, MPC firms exhibited better financial management and adaptability, improving efficiency over time, while NPC firms faced persistent challenges, particularly in liquidity and cash flow management. The post-COVID period proved to be the most difficult for both groups, emphasizing the need for stronger financial strategies to sustain profitability and stability in the pharmaceutical sector. The future studies can get the lead from current study to determine the financial ratios analysis of other industrial sectors including textile, automobile, sugar, food items and banking by applying other statistical tools.

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