

Prasad, Ramesh; Mondal, Amitava

Article

Consequences of Covid-19 outbreak on Indian listed SMEs: Sector-specific analysis in the context of performance perspectives

Rajagiri Management Journal (RAMJ)

Provided in Cooperation with:

Rajagiri Business School and Rajagiri College of Social Sciences, Kochi

Suggested Citation: Prasad, Ramesh; Mondal, Amitava (2025) : Consequences of Covid-19 outbreak on Indian listed SMEs: Sector-specific analysis in the context of performance perspectives, Rajagiri Management Journal (RAMJ), ISSN 2633-0091, Emerald, Leeds, Vol. 19, Iss. 2, pp. 86-97, <https://doi.org/10.1108/RAMJ-09-2023-0250>

This Version is available at:

<https://hdl.handle.net/10419/337056>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Consequences of Covid-19 outbreak on Indian listed SMEs: sector-specific analysis in the context of performance perspectives

Ramesh Prasad

Department of Commerce and Finance, Amity University - Kolkata Campus, Kolkata, India and

Department of Commerce and Management, St. Xavier's University, Kolkata, India, and

Amitava Mondal

Department of Commerce, Sidho-Kanho-Birsha University, Purulia, India

Abstract

Purpose – The repercussions of the “Covid-19 pandemic” have been felt across all the global economies. Therefore, this study evaluates its consequences on the performance of Indian-listed SMEs across the manufacturing, service, and pharmaceutical sectors in terms of financial performance, solvency position, and market performance.

Design/methodology/approach – This study selects 100 Indian SMEs that trade their shares on the BSESME exchange. The selected SMEs are divided into three sectors: manufacturing (56), service (35), and pharmaceutical (9). Total revenue, operating profit, net profit ratio, current ratio and market capitalization serve as Performance parameters. These performance indicators are analysed for the periods before the pandemic (2019–20) and during the pandemic (2020–21) using the Wilcoxon signed-rank test.

Findings – The performance of Indian SMEs has been notably affected by the Covid-19 outbreak. The analysis reveals that the financial performance, solvency, and market performance of SMEs in the manufacturing sector drastically dropped during the pandemic period. Additionally, the analysis demonstrates that the performance of SMEs in the service industry has not been considerably impacted. In contrast, the pharmaceutical industry witnessed a significant improvement in its financial and market performance, but faced a substantial fall in its solvency position over the pandemic period.

Practical implications – This study offers insightful practical implications for policymakers, decision-makers, investors and other stakeholders in the SME context.

Originality/value – This study makes a pioneering attempt to add new insights to the existing body of literature. It presents a sector-by-sector analysis of the impact of the Covid-19 pandemic on Indian SME. This empirical inquiry in the setting of Indian SMEs has not been attempted in the earlier literature.

Keywords Covid-19, India, SMEs performance, Wilcoxon signed-rank test, Sector-wise effect

Paper type Research paper

1. Introduction

The city of Wuhan in China initially reported the discovery of a disease called coronavirus (Covid-19) on December 31, 2019 (www.who.int), which gradually spread worldwide on a large scale. On January 11, 2020, the “World Health Organization” (WHO) declared Covid-19 a pandemic, identifying it as a “Public Health Emergency of International Concern” (Alsamhi et al., 2022). Due to its rapid spread, Covid-19 quickly became a significant global public health risk. To protect public health, and contain the outbreak, most countries implemented strict



lockdown measures. As a result, the business segment all over the world has been affected to a great extent (Cepel *et al.*, 2020; Patma *et al.*, 2021; Behera *et al.*, 2020; Achim *et al.*, 2021).

In India, a complete nationwide lockdown was implemented (beginning on March 24, 2020) to curb the transmission of the Covid-19 virus. During this period, business operations were halted entirely. Small and medium-sized enterprises (SMEs) were particularly vulnerable and experienced the most significant negative impact due to the Strick lockdown and suspension of operational activities (Prasad and Mondal, 2020; Rababah *et al.*, 2020; Tripathy and Bisoyi, 2021; Bularafa and Adamu, 2021). SMEs encountered numerous challenges during pandemic, including procurement of raw materials, decreasing production, unavailability of human resources for production work, and a decrease in sales, etc (Hariharan *et al.*, 2021). Dun and Bradstreet report highlights that more than 82% of SMEs have been impacted due to the detrimental impacts of the “Covid-19” epidemic (Economic Times, 22nd April 2021). SMEs are widely acknowledged as a foundation of the Indian economy due to their substantial contribution to economic growth (Tripathy and Bisoyi, 2021; Behera *et al.*, 2020). Hence, examining the extent to which “Covid-19 pandemic” has affected the SME performance is crucial.

After screening previous studies, it is evident that the Covid-19 outbreak has profoundly impacted the performance of Indian SMEs. However, this topic remains a subject of ongoing analysis and discussion. The sector-specific effects of the Covid-19 pandemic on SMEs’ performances have not been adequately addressed in the previous literature. Notably, there is a lack of empirical studies examining sector-wise impacts within the Indian context. According to the report (2020–21) of the Ministry of Chemical and Fertilizers, Department of Pharmaceutical, the pharmaceutical sector has outperformed during the pandemic with two-digit growth, while the manufacturing sector was drastically hampered. In contrast, service sector SMEs exhibited mixed impacts. This empirical paper aims to clarify the ongoing discussion by examining the consequences of the Covid-19 outbreak on the performance of Indian SMEs, with particular focus on the manufacturing, service, and pharmaceutical sectors.

This study is structured into five major sections. 1. Introduction followed by 2. Prior literature and development of the hypothesis, 3. Research design and methodology, 4. Empirical analysis and findings and 5. Conclusions and practical implication.

2. Prior literature and development of hypothesis

2.1 The Black Swan Theory

Past research by Mishra (2020) and Nguyen (2022) pointed out that the Covid-19 outbreak can be considered a “Black Swan event”. The “Black Swan theory” was coined by Nassim Nicholas Taleb (2007), who outlined three characteristics of a Black Swan event: (1) “the event must be unexpected”, (2) “the event’s impact must be oversized”, (3) “the event and its reasons can only be assessed after it has occurred”. The “Covid-19 pandemic” meets these criteria, making it a “Black Swan event” in the global economy.

Seminal studies have been reviewed regarding the effects of the Covid-19 outbreak on financial performance, solvency performance, and market performance.

2.2 Consequence of the Covid-19 outbreak on the performance of the manufacturing sector

Devi *et al.* (2020) conducted an investigation into the impact of the Covid-19 pandemic financial performance of 214 Indonesian stock exchange companies listed using the Wilcoxon Signed Rank Test. They demonstrated that profitability and liquidity declined during the pandemic, while leverage and debtor turnover were adversely affected. Rababah *et al.* (2020) analysed the Covid-19 the Covid-19 pandemic on the financial performance of Chinese SMEs. The pooled OLS results demonstrated a decline in financial performance. Hariharan *et al.* (2021) conducted a case study on MSMEs’ financial performance in Kerala (India), reporting a drastic negative impact on account of the pandemic. Another study conducted by Sun *et al.*

(2021) related to the effect of the pandemic crisis on the financial performance of Chinese SMEs. Confirmatory Factor Analysis (CFA) reported that profitability and business operations were severely negatively affected by the corona outbreak. [Belas et al. \(2021\)](#) studied the pandemic's effect on risk management across SMEs in the Slovak Republic and Czech Republic, reporting a negative impact on the financial performance of SMEs. In a survey-based study, [Bularafa and Adamu \(2021\)](#) found that lockdowns and market closures significantly affected SMEs' operations in Nigeria. [Suryani et al. \(2021\)](#), using primary data from South Kalimantan, found that the gross income and profitability of SMEs were significantly impacted during the pandemic. A recent study by [Wijayanto and Seno \(2021\)](#) investigated a comparative study of 44 consumer goods industries in Indonesia based on ROA and ROE. The multivariate analysis variable demonstrated a significant decline in the manufacturing sector's financial performance. In contrast, the pharmaceutical sector gained a significant increase in financial performance. Based on the above discussions, we hypothesize that

- H1a.* Total revenue of manufacturing sector SMEs declined significantly during the pandemic period.
- H1b.* Operating profit of manufacturing sector SMEs declined significantly during the pandemic period.
- H1c.* Net profit ratio of manufacturing sector SMEs declined significantly during the pandemic period.
- H1d.* Current ratio of manufacturing sector SMEs declined significantly during the pandemic period.
- H1e.* Market capitalization of manufacturing sector SMEs declined significantly during the pandemic period.

2.3 Consequence of the Covid-19 outbreak on the performance of the service sector

The food industry, retail chains dealing with grocery items, and the I.T sector have not been affected to a large extent. Online orders and home delivery services for the food industry and grocery businesses increased substantially ([Sardar et al, 2022](#)). Essential food items and grocery businesses were also allowed relaxation even during the lockdown period. There was a high panic buying during the lockdown, resulting in an increase in the performance of the service industry. Conversely, the I.T sector adopted a work-from-home policy during lockdown. A recent study by [Wijayanto and Seno \(2021\)](#) investigated a comparative study of 44 consumer goods industries in Indonesia, focusing on ROA and ROE. The Multivariate Analysis Variance revealed that the financial performance of the manufacturing unit decreased significantly; in contrast, the pharmaceutical sector gained a significant increase in financial performance. Based on the above argument, we hypothesize that

- H2a.* Total revenue of service sector SMEs did not decline significantly during the pandemic period.
- H2b.* Operating profit of service sector SMEs did not decline significantly during the pandemic period.
- H2c.* Net profit ratio of service sector SMEs did not decline significantly during the pandemic period.
- H2d.* Current ratio of service sector SMEs did not decline significantly during the pandemic period.

H2e. Market performance of service sector SMEs did not decline significantly during the pandemic period.

2.4 Consequence of the Covid-19 outbreak on the performance of the pharmaceutical sector

The impact of the Covid-19 pandemic on the pharmaceutical industry has distinct than it does on other industries. According to the report 2020-21 of the Ministry of Chemical and Fertilizers, Department of Pharmaceutical, the pharmaceutical sector outperformed during the pandemic with a two-digit growth. An event-based study by [Mittal and Sharma \(2021\)](#) examined the movement of stock prices for Indian pharmaceutical companies and reported that the pharma unit generated positive abnormal returns due to rising stock prices. Another recent study by [Tanor and Purba \(2022\)](#) used a paired sample *t*-test to assess the impact of the Covid-19 on the financial performance of 10 pharmaceutical companies in Indonesia and reported a significant increase in profitability and growth ratio. Therefore, we hypothesize that

H3a. Total revenue of pharmaceutical sector SMEs increased significantly during the pandemic period.

H3b. Operating profit of pharmaceutical sector SMEs increased significantly during the pandemic period.

H3c. Net profit ratio of pharmaceutical sector SMEs increased significantly during the pandemic period.

H3d. Current ratio of pharmaceutical sector SMEs increased significantly during the pandemic period.

H3e. Market capitalization of pharmaceutical sector SMEs increased significantly during the pandemic period.

3. Research design and methodology

The present research seeks to explore the effect of the Covid-19 pandemic on three specific sectors with regard to a performance analysis of SMEs in India. For this purpose, this study targets 100 Indian-listed SMEs, comprising 56 from the manufacturing sector, 35 from the service sector, and 9 from the pharmaceutical sector (see [Table 1](#)). The study is restricted to these 100 SMEs, as 36 firms dropped out of the total population of 136 due to the unavailability of data or missing values. Additionally, secondary data were extracted from annual reports

Table 1. Sample reduction process

| Sector | SMEs before Screening | No. of dropped SMEs | No. Of final SMEs after filtering | Industry represented within each sector of the SMEs |
|----------------|-----------------------|---------------------|-----------------------------------|---|
| Manufacturing | 72 | 16 | 56 | Real estate, steel, apparel, chemical, furniture, cable, agricultural product |
| Service | 48 | 13 | 35 | I.T, housing finance, food, retail, consultancy, transport, FMCG. |
| Pharmaceutical | 16 | 7 | 9 | Medicine, medical equipment, laboratory |

Source(s): Authors' calculation

covering the periods before the pandemic period (2019–20) and during the pandemic period (2020–21). Total revenue, operating profit, and net profit ratio indicate proxy measures for financial performance, while the current ratio and market capitalization indicate solvency performance and market performance, respectively. These performance parameters have been used in previous studies by [Alsamhi et al. \(2022\)](#), [Devi et al. \(2020\)](#), [Karim et al. \(2021\)](#), [Limbong \(2022\)](#), [Tanor and Purba \(2022\)](#). Further, to quantify the impact of the pandemic, we estimate the positive or negative changes for each performance indicator between pre-pandemic and during pandemic periods. Additionally, the Wilcoxon signed-rank test, an appropriate statistical tool for non-normal distributed data, is employed, guided by [Alsamhi et al. \(2022\)](#) and [Devi et al. \(2020\)](#). This test was used to determine the statistical significance of the changes in the performance parameters.

4. Data analysis and findings

4.1 Summary of sector-wise performance

[Table 2](#) summarizes a sector-wise analysis of the sample SMEs' performance before and during the pandemic. In view of the manufacturing sector's financial performance, the results reveal that the average total revenue before the pandemic (2019–20) was 229.08 Cr, which dropped to 191.69 Cr during the pandemic (2020–21). The results signify that the total revenue declined due to the suspension of operational activities during the lockdown. Similarly, the operating profit in this sector dropped from 840.82 Cr in 2019–20 (before the pandemic) to 810.98 Cr in 2020–21 (during the pandemic). In the same vein, the average values of the net profit ratio prior to and during the pandemic were 3.40% and 1.55%, respectively. Regarding solvency performance, the manufacturing sector's average current ratios increased slightly from 1.97 times prior to the pandemic to 2.03 times during the pandemic. An increase in the current ratio may have been caused by the accumulation of closing stock during the pandemic. For the market performance of the manufacturing sector of SMEs, the average market

Table 2. Descriptive statistics for sector-wise performance

| Variables | Before Pandemic (BP) | | | | During Pandemic (DP) | | | |
|---------------------------------------|----------------------|---------|--------|--------|----------------------|---------|---------|---------|
| | Min | Max | Mean | SD | Min | Max | Mean | SD |
| <i>Manufacturing sector (n = 56)</i> | | | | | | | | |
| TR (Cr) | 0.80 | 4759.44 | 229.08 | 646.52 | 0.22 | 4565.62 | 191.69 | 613.39 |
| OP (Cr) | −94.05 | 840.82 | 22.74 | 114.11 | −93.09 | 810.98 | 18.14 | 110.61 |
| NPR (%) | −36.64 | 28.06 | 3.40 | 9.60 | −50.63 | 40.63 | 1.55 | 15.19 |
| CR (times) | 0.74 | 9.42 | 1.97 | 1.33 | 0.22 | 9.02 | 2.03 | 1.49 |
| MC (Cr) | 5.25 | 1010.62 | 127.65 | 152.45 | 7.2 | 967.91 | 109.48 | 165.37 |
| <i>Service sector (n = 35)</i> | | | | | | | | |
| TR (Cr) | 0.97 | 916.87 | 113.99 | 180.94 | 0.57 | 762.03 | 106.88 | 160.88 |
| OP (Cr) | −8.89 | 55.61 | 14.78 | 18.30 | −20.26 | 104.43 | 13.42 | 26.66 |
| NPR (%) | −38.09 | 37.13 | 7.04 | 14.26 | −45.74 | 25.78 | 6.98 | 12.54 |
| CR (times) | 0.84 | 8.47 | 2.4 | 1.59 | 0.79 | 5.09 | 2.12 | 1.13 |
| MC (Cr) | 5.19 | 363.86 | 105.64 | 79.26 | 6.2 | 628.20 | 75.81 | 149.10 |
| <i>Pharmaceutical sector (n = 09)</i> | | | | | | | | |
| TR (Cr) | 3.14 | 585.21 | 161.93 | 203.93 | 2.8 | 663.19 | 213.44 | 261.81 |
| OP (Cr) | 0.38 | 173.41 | 29.56 | 55.87 | 0.02 | 157.27 | 40.13 | 61.32 |
| NPR (%) | 1.83 | 21.23 | 9.67 | 6.79 | 0.85 | 23.41 | 11.06 | 8.4 |
| CR (times) | 1.23 | 4.07 | 2.33 | 1.24 | 1.09 | 3.73 | 1.97 | 0.95 |
| MC (Cr) | 2.77 | 1363.84 | 217.46 | 442.92 | 4.59 | 3625.27 | 563.395 | 1176.14 |

Note(s): TR, OP, NPR, CR and MC indicate total revenue, operating profit, net profit ratio, current ratio and market capitalization

Source(s): Authors' calculation

capitalization declined from 127.65 Cr in 2019–20 (before the pandemic) to 109.48 Cr in 2020–21 (during the pandemic), suggesting that the pandemic adversely affected the share price of the manufacturing sector SMEs.

With regard to the results of the service sector, as exhibited in the above table, the results highlight that the average total revenue generated by service sector SMEs before the pandemic (2019–20) was 113.99 Cr, while it reduced to 106.88 Cr during the pandemic (2020–21). The results suggest that the total revenue of the service sector shrank during the pandemic period. In the same vein, operating profit dropped slightly from 14.78 Cr in 2019–20 (before the pandemic) to 13.42 Cr in 2020–21 (during the pandemic). Similarly, the net profit ratios of service sector SMEs prior to and during the pandemic were 7.04% and 6.98%, respectively. The findings suggest that the operating profit and net profit ratio of SMEs in the service industry dropped during the pandemic period. Further, considering the solvency performance of service sector SMEs, the average values of the current ratio prior to the pandemic and during the pandemic are 2.40 times and 2.12 times. This indicates that the liquidity position of service sector SMEs was affected by the pandemic. Similarly, prior to the pandemic, the average market capitalization of SMEs in the service sector was 105.64 Cr, but it dropped to 75.81 Cr during the pandemic period. The results reveal that the SMEs in the service industry witnessed a deterioration in their market performance over the pandemic period.

Illustrating the results of the pharmaceutical sector's financial performance, [Table 2](#) shows that the results show that average total revenue generated by pharmaceutical sector SMEs before the pandemic (2019–20) was 161.93 Cr and jumped to 213.44 Cr during the pandemic (2020–21). This signifies that the revenues of the pharmaceutical sector shoot up during the pandemic period. This particular sector was allowed relaxation due to the high demand for medical requirements. Similarly, the operating profit of the pharmaceutical sector increased from 29.56 Cr in 2019–20 (before the pandemic) to 40.13 Cr in 2020–21 (during the pandemic). In the same vein, the average values of the net profit ratio prior to and during the pandemic were 9.67% and 11.06%, respectively. The results demonstrate that financial pharmaceutical sector SMEs outperformed during the pandemic time. Regarding solvency performance, it reveals that the average current ratios before the pandemic and during the pandemic are 2.33 times and 1.97 times. It indicates the clearing of closing stocks and maximum utilization of liquid cash in the production of medicine and equipment. In view of the market performance of pharmaceutical sector SMEs, average market capitalization jumped from 217.46 Cr in 2019–20 (before the pandemic) to 563.95 Cr in 2020–21 (during the pandemic).

4.2 Normality test

[Table A1](#) and [Table A2](#) (see [appendix](#)) show the normality test of sample data. A normality test is required for selection between parametric and non-parametric statistical tests. According to the above-mentioned tables, the test statistics of the majority of the observations are significant at a 1% level (0.000). The normality test's findings indicate that the sample SME data are not normally distributed. Therefore, a parametric statistical test could not be applied. Hence, the current study incorporates Wilcoxon signed rank (a measure of the non-parametric statistical test) guided by the prior literature of [Devi et al. \(2020\)](#), [Alsamhi et al. \(2022\)](#) and [Nguyen \(2022\)](#).

4.3 Analysis of Wilcoxon signed rank test results

[Table 3](#) depicts the Wilcoxon signed-rank test results. None of the SMEs showed identical values for total revenue, operating profit, net profit ratio, current ratio (CR), and market capitalization (MC), as indicated by tie values of 0 for the manufacturing and pharmaceutical sectors. However, the service sector's current ratio shows a tie value of 1, signifying that one sample SME's current ratio has an equal current ratio prior to as well as during the pandemic. A decline in revenue during the pandemic was documented for 37, 23, and 3 sample SMEs in the manufacturing sector, service sector, and pharmaceutical sectors, respectively, as indicated by negative ranks. Conversely, 19, 12 and 6 sample SMEs in these sectors witnessed an

Table 3. Wilcoxon signed-rank test results

| Variables | Negative ranks (n) | Mean rank | Sum of Ranks | Positive ranks (n) | Mean rank | Sum of Ranks | Ties (n) | Total |
|------------------------------|--------------------|-----------|--------------|--------------------|-----------|--------------|----------|-------|
| <i>Manufacturing Sector</i> | | | | | | | | |
| TR _{DP} – | 37 | 32.62 | 1207.00 | 19 | 20.47 | 389.00 | 0 | 56 |
| TR _{BP} | | | | | | | | |
| OP _{DP} – | 34 | 32.79 | 1115.00 | 22 | 21.86 | 481.00 | 0 | 56 |
| OP _{BP} | | | | | | | | |
| NPR _{DP} – | 35 | 27.77 | 972.00 | 21 | 29.71 | 624.00 | 0 | 56 |
| NPR _{BP} | | | | | | | | |
| CR _{DP} – | 25 | 29.68 | 742.00 | 31 | 27.55 | 857.00 | 0 | 56 |
| CR _{BP} | | | | | | | | |
| MC _{DP} – | 24 | 22.19 | 532.5 | 32 | 33.23 | 1063.5 | 0 | 56 |
| MC _{BP} | | | | | | | | |
| <i>Service Sector</i> | | | | | | | | |
| TR _{DP} – | 23 | 18.04 | 415.00 | 12 | 17.92 | 215.00 | 0 | 35 |
| TR _{BP} | | | | | | | | |
| OP _{DP} – | 18 | 17.67 | 318.00 | 17 | 18.35 | 312.00 | 0 | 35 |
| OP _{BP} | | | | | | | | |
| NPR _{DP} – | 20 | 17.43 | 348.50 | 15 | 18.77 | 281.5 | 0 | 35 |
| NPR _{BP} | | | | | | | | |
| CR _{DP} – | 22 | 17.80 | 391.50 | 12 | 16.96 | 203.50 | 1 | 35 |
| CR _{BP} | | | | | | | | |
| MC _{DP} – | 16 | 17.81 | 285.00 | 19 | 18.16 | 345.00 | 0 | 35 |
| MC _{BP} | | | | | | | | |
| <i>Pharmaceutical sector</i> | | | | | | | | |
| TR _{DP} – | 3 | 2.33 | 7.00 | 6 | 6.33 | 38.00 | 0 | 09 |
| TR _{BP} | | | | | | | | |
| OP _{DC} – | 2 | 4.50 | 9.00 | 7 | 5.14 | 36.00 | 0 | 09 |
| OP _{BP} | | | | | | | | |
| NPR _{DP} – | 4 | 3.50 | 14.00 | 5 | 6.20 | 31.00 | 0 | 09 |
| NPR _{BP} | | | | | | | | |
| CR _{DP} – | 4 | 7.25 | 29.00 | 5 | 3.20 | 16.00 | 0 | 09 |
| CR _{BP} | | | | | | | | |
| MC _{DP} – | 0 | 0.00 | 0.00 | 9 | 5 | 45 | 0 | 09 |
| MC _{BP} | | | | | | | | |

Note(s): Negative rank = During pandemic < before; positive rank = During pandemic > before pandemic;
Ties = During pandemic = before pandemic

TR_{DP} = Total revenue during pandemic

TR_{BP} = Total revenue before the pandemic

OP_{DP} = Operating Profit during the pandemic

OP_{BP} = Operating Profit before the pandemic

NPR_{DP} = Net Profit ratio during the pandemic

NPR_{BP} = Net Profit ratio before the pandemic

CR_{DP} = Current ratio during the pandemic

CR_{BP} = Current ratio before the pandemic

Source(s): Authors' calculation

increase in total revenue during the pandemic, as shown by positive ranks. Similarly, negative ranks for manufacturing, service, and pharmaceutical sector SMEs exhibited that operating profit dropped for 34, 18, and 2 sample SMEs, respectively, during the pandemic. In contrast, 22, 17 and 7 sample SMEs in the above-mentioned sectors exhibited a rise in operating profit across the pandemic, as documented by positive ranks. In the same vein, negative rank revealed that net profit ratios dropped for 35, 20, and four sample SMEs in the manufacturing, service, and pharmaceutical sectors SMEs throughout the pandemic. In contrast, 21, 15 and 5

sample SMEs in these sectors reported an enhancement in net profit ratio over the pandemic based on positive ranks. The current ratio showed a reduction in liquidity position for 25, 22, and four sample SMEs in the selected sectors. While 31, 12 and 5 sample SMEs in the manufacturing sector, service sector, and pharmaceutical sector SMEs witnessed an improvement in their liquidity position across the pandemic, as revealed by positive ranks. Additionally, a total of 24 SMEs in the manufacturing sector and 16 SMEs in the service sector indicated that their market capitalization declined over the pandemic period, as reported by negative ranks. While 32 SMEs in the manufacturing sector, 19 SMEs in the service sector, and 9 sample SMEs in the pharmaceutical sector reported an increase in their market capitalization throughout the pandemic, as evidenced by positive ranking.

Table 4 shows the significant change in the performance of SMEs over the pandemic period. Regarding the manufacturing sector's financial performance, the analysis reveals significant differences in the total revenue (TR), operating profit (OP), and net profit ratio (NPR) between pre-pandemic and during-pandemic, as per the Z values of negative rank significance at 1% and 5% level. In line with the solvency performance and market performance of the manufacturing sector, the results demonstrate a noteworthy disparity in the current ratio (CR) and market capitalization (MC) between the pre-Covid-19 period and the pandemic time, as evidenced by the Z values of negative rank significance at 1% and 5% levels. These results imply that the financial performance, solvency performance, and market performance were significantly affected by the implementation of lockdown and shutdown of all business operations, particularly for manufacturing units. The results are similar to the earlier investigations of [Alsamhi et al. \(2022\)](#), [Devi et al. \(2020\)](#), [Rababah et al. \(2020\)](#). Consequently, H1a, H1b, H1c, H1d, H1e, accepted, which states that there is a considerable drop in the performance of manufacturing sector SMEs over the pandemic period.

Regarding service sector SMEs, the findings highlight no significant change in the total revenue (TR), operating profit (OP), net profit ratio (NPR), current ratio (CR), and market capitalization (MC) prior to and during the Covid-19 epidemic, as suggested from the Z values, which is not significant. The findings of the Wilcoxon Signed Rank Test results illustrate that the performance of SMEs in the service sector has not been significantly affected during the pandemic. The findings confirm the previous study of [Alsamhi et al. \(2022\)](#). I.T. sectors, food, retail, FMCG, and transport units are majorly included in our sample of service sectors. Food items and retail chains dealing with grocery products were beyond the limit of lockdown. These units were allowed to function for short intervals, even during lockdown periods. Transport of necessary livelihood items like milk, eggs, and other grocery items was relaxed. This might be the reason that the service sector has not been affected to a great extent. On the other side, I.T sector units started the work from home concept; as a result, the pandemic has not been affected largely by the service sector. [Alsamhi et al. \(2022\)](#) found similar results in the case of Indian companies. Our results confirm the previous findings of [Nguyen \(2022\)](#), [Linda](#)

Table 4. Test statistics of Wilcoxon signed rank test

| Sector | Test statistic and Significance | TR _{DP} | OP _{DP} | NPR _{DP} | CR _{DP} | MC _{DP} |
|----------------|---------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | | -TR _{BP} | -OP _{BP} | -NPR _{BP} | -CR _{BP} | -MC _{BP} |
| Manufacturing | Z | -3.961 ^a | -2.586 ^a | -1.419 ^a | -0.457 ^a | -2.166 ^a |
| | Asymp. Sig. (2-tailed) | 0.003 | 0.010 | 0.045 | 0.008 | 0.030 |
| Service | Z | -1.638 ^b | -0.049 ^b | -0.549 ^b | -1.607 ^a | -4.91 ^a |
| | Asymp. Sig. (2-tailed) | 0.101 | 0.961 | 0.583 | 0.108 | 0.623 |
| Pharmaceutical | Z | -1.836 ^b | -1.599 ^b | -1.007 ^b | -0.771 ^a | -2.666 ^b |
| | Asymp. Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 |

Note(s): ^abased on Negative rank (performance During pandemic < Before pandemic)

^bbased on Positive rank (performance During pandemic > Before pandemic)

Source(s): Authors' calculation

and Anggita (2022), Tanor and Purba (2022). In that regard, H2a, H2b, H2c, H2d and H2e were accepted, which explains that there has not been a noticeable drop in the performance parameters of SMEs in the service sector over Covid-19 pandemic period.

With respect to pharmaceutical sector SMEs, the analysis demonstrates a substantial difference in total revenue (TR), operating profit (OP), and net profit ratio (NPR) before and during the Covid-19 pandemic, as indicated from the Z values of positive rank significance at 1% level. The results confirm that the pharmaceutical sector's financial performance has been significantly risen across the pandemic period. Our results remain consistent with previous findings of Wijayanto and Seno (2021). This is the only sector that gained double-digit growth during the pandemic. The pharmaceutical sector was exclusively allowed to manufacture to meet the high demand for medicine. Regarding the solvency performance and market performance of pharmaceutical sector SMEs, there is a significant decrease in the current ratio; in contrast, market capitalization has been increased. There was a high demand (panic demand) for medicine during the pandemic, resulting in frequent selling of closing stocks and maximum utilization of liquid cash. This may be the probable reason for the decline in the current ratio. Additionally, the pharmaceutical industry's share price has shot up during the pandemic, as reflected in market capitalization. Therefore, based on the reported results, H3a, H3b, H3c and H3e are accepted; however, H3d is rejected.

5. Conclusion and practical implications

The performance of SMEs in India has profoundly deteriorated as a result of the "Covid-19 pandemic". The present study investigates the sector-wise (manufacturing, service, and pharmaceutical sector) impacts of the pandemic on 100 Indian listed SME performance by assessing financial performance, solvency performance and market performance using the Wilcoxon Signed Rank Test. Total revenue, operating profit, net profit ratio, current ratio and market capitalization are used as a proxy of performance parameters. This research identifies the following insightful conclusions. Firstly, manufacturing sector SMEs have been tremendously affected owing to the worsening Covid-19 pandemic. Financial performance, solvency performance, and market performance have been significantly deteriorated during pandemic. The Covid-19 pandemic's adverse effect might be seen as a susceptibility to the danger of survival for SMEs in the manufacturing sector. This result can be viewed as a vulnerability to the survival risks for the Indian SMEs' manufacturing sectors. Secondly, the notable finding is that there has not been any significant change in the financial performance, solvency performance, and market performance of service sector SMEs. The drastic effect of the pandemic on service sector SMEs is quite unusual. The food industry and essential grocery retail segment were allowed to relax during the Covid-19 pandemic, resulting in a surge in demand due to panic buying. As a result, sales have been increased quickly. The I.T. segment moved from a physical to a work-from-home policy. Thirdly, this study demonstrates that pharmaceutical sector SMEs have generated a significant sharp increase in financial and market performance during the pandemic, likely due to heightened demand for medical supplies. On the contrary, the liquidity position for this sector fell significantly to address the pressing demands for medical services during the pandemic. The financial relief package of 20 lakhs Cr for MSME and revision for MSME classification to bring under the purview of the relief package might be helpful to a great extent to the highly affected business unit.

This study proposes practical implications for policymakers, managers and the academic fraternity. A proper mechanism for providing loans, especially for SMEs, along with tax relief to tackle unforeseen incidents, is essential for reviving the affected business units. In addition to that, the management team must formulate a sound strategy relating to the reduction of unnecessary expenses during such a crisis period. A comprehensive plan by the Indian government is quite indispensable for effectively managing unanticipated incidents in the future. This study is also relevant from an investor perspective. They can make a rational investment decision considering the varying degrees of impact, including the least affected, highly affected and those exhibiting sustainable growth of SME units.

A number of limitations need to be acknowledged regarding the present study. Alternative measures of financial performance, such as ROI, ROE, and ROA, have not been included here. On the other side, this study is based on a 100-sample size only. Future research should focus on cross-country comparisons of SMEs' sector-wise recovery strategies to enrich our understanding of global best practices and innovative solutions.

References

- Achim, M.V., Safta, I.L., Văidean, V.L., Mureșan, G.M. and Borlea, S.N. (2021), "The impact of covid-19 on financial management: evidence from Romania", *Economic Research-Ekonomika Istraživanja*, Vol. 34 No. 1, pp. 1807-1832, doi: [10.1080/1331677X.2021.1922090](https://doi.org/10.1080/1331677X.2021.1922090).
- Alsamhi, M.H., Al-Ofairi, F.A., Farhan, N.H.S., Al-ahdal, W.M. and Siddiqui, A. (2022), "Impact of Covid-19 on firms' performance: empirical evidence from India", *Cogent Business and Management*, Vol. 9 No. 1, pp. 1-16, doi: [10.1080/23311975.2022.2044593](https://doi.org/10.1080/23311975.2022.2044593).
- Behera, M., Mishra, S., Mohapatra, N. and Behera, A.K. (2020), "COVID-19 pandemic and micro, small and medium enterprises (MSMEs): policy response for revival", *Small Enterprise Development and management Extension*, Vol. 47 No. 3, pp. 213-228, doi: [10.1177/09708464211037485](https://doi.org/10.1177/09708464211037485).
- Belas, J., Gavurova, B., Dvorsky, J., Cepel, M. and Durana, P. (2021), "The impact of COVID-19 pandemic on the selected areas of a management system in SMEs", *Economic Research-Ekonomika Istraživanja*, Vol. 35 No. 1, pp. 3754-3777, doi: [10.1080/1331677X.2021.2004187](https://doi.org/10.1080/1331677X.2021.2004187).
- Bularafa, B.A. and Adamu, U.G. (2021), "Effect of COVID-19 pandemic on SME performance in Nigeria", *Advance International Journal of Business, Entrepreneurship and SMEs (AIJBE)*, Vol. 3 No. 7, pp. 75-92, doi: [10.35631/AIJBE.37007](https://doi.org/10.35631/AIJBE.37007).
- Cepel, M., Gavurova, B., Dvorsky, J. and Belas, J. (2020), "The impact of COVID-19 crisis on the perception of business risk in the SME segment", *Journal of International Studies*, Vol. 13 No. 3, pp. 248-263, doi: [10.14254/2071-8330.2020/13-3/16](https://doi.org/10.14254/2071-8330.2020/13-3/16).
- Devi, S., Warasniasih, N.M.S., Masdiantini, P.R. and Musmini, L.S. (2020), "The impact of COVID-19 pandemic on the financial performance of firms on the Indonesia Stock Exchange", *Journal of Economics, Business and Accountancy Ventura*, Vol. 23 No. 2, pp. 226-242, doi: [10.14414/jebav.v23i2.2313](https://doi.org/10.14414/jebav.v23i2.2313).
- Hariharan, A., Thomas, S. and Viswanathan, P.K. (2021), "Impact of COVID-19 on performance of Micro, small and medium enterprises (Msmes) in India- A case study in Kerala", *Annals of the Romania Society for Cell Biology*, Vol. 25 No. 4, pp. 14797-14816, available at: <https://www.annalsofscrb.ro/index.php/journal/article/view/4667>.
- Karim, M.R., Shetu, S.A. and Razia, S. (2021), "Covid-19, liquidity and financial health: empirical evidence from South Asian economy", *Asian Journal of Economics and banking*, Vol. 5 No. 3, pp. 307-323, doi: [10.1108/AJEB-03-2021-0033](https://doi.org/10.1108/AJEB-03-2021-0033).
- Limbong, G. (2022), "Analysis of company's financial performance before and during the Covid-19 pandemic (2019-20) in pharmaceutical sector companies listed on the IDX", *Journal of Management*, Vol. 10 No. 2, pp. 156-165, doi: [10.36546/jm.v10i2.549](https://doi.org/10.36546/jm.v10i2.549), available at: <https://pdfs.semanticscholar.org/b64b/f730856d5bab11428187ebccb889b2b27ee4.pdf>.
- Linda, P.S. and Anggita, L.W. (2022), "Financial liquidity of Indonesia manufacturing companies before and during the Covid-19 pandemic", *CECCAR Business Review*, Vol. 3 No. 1, pp. 61-72, doi: [10.37945/cbr.2022.01.08](https://doi.org/10.37945/cbr.2022.01.08).
- Mishra, P.K. (2020), "COVID-19, Black Swan events and the future of disaster risk management in India", *Progress in Disaster Science*, Vol. 8, pp. 1-5, doi: [10.1016/j.pdisas.2020.100137](https://doi.org/10.1016/j.pdisas.2020.100137).
- Mittal, S. and Sharma, D. (2021), "The impact of Covid-19 on stock returns of the Indian healthcare and pharmaceutical sector", *Australian, Accounting Business and Finance Journal*, Vol. 15 No. 1, pp. 5-21, doi: [10.14453/aabfj.v15i1.2](https://doi.org/10.14453/aabfj.v15i1.2).
- Nguyen, H.T.X. (2022), "The effect of Covid-19 pandemic on financial performance of firms: empirical evidence from Vietnamese logistic enterprises", *Journal of Asian Finance, Economics and Business*, Vol. 9 No. 2, pp. 177-183, doi: [10.13106/jafeb.2022.vol9.no2.0177](https://doi.org/10.13106/jafeb.2022.vol9.no2.0177).

- Patma, T.S., Wardana, L.W., Wibowo, A., Narmaditya, B.S. and Akbarina, F. (2021), "The impact of social media marketing for Indonesia SMEs sustainability: lesson from Covid-19 pandemic", *Cogent Business and Management*, Vol. 8 No. 1, pp. 1-16, doi: [10.1080/23311975.2021.1953679](https://doi.org/10.1080/23311975.2021.1953679).
- Prasad, R. and Mondal, A. (2020), "Impact of COVID-19 pandemic on Indian economy with special reference to Indian MSME sector", Mukherjee, S. (Ed.), *CORONA OUTBREAK (A Compendium Volume)*, Sidho-Kanho-Birsha University, Purulia, pp. 44-51.
- Rababah, A., Al-Haddad, L. and Sial, M.S. (2020), "Analysing the effect of Covid-19 pandemic on the financial performance of Chinese listed companies", *Journal of Public Affairs*, Vol. 20, e2440, doi: [10.1002/pa.2440](https://doi.org/10.1002/pa.2440).
- Sardar, S., Ray, R., Hasan, M.K., Chitra, S.S., Parvez, A.S. and Avi, M.A.R. (2022), "Assessing the effects of Covid-19 on restaurant business from restaurant owners' perspective", *Frontiers in Psychology*, Vol. 13, pp. 1-10, doi: [10.3389/fpsyg.2022.849249](https://doi.org/10.3389/fpsyg.2022.849249).
- Sun, T., Zhang, W.W., Dinca, M.S. and Raza, M. (2021), "Determining the impact of COVID-19 on the business norms and performance of SMEs in China", *Economic Research-EkonomaskaIstraživanja*, Vol. 35, pp. 1-21, doi: [10.1080/1331677X.2021.1937261](https://doi.org/10.1080/1331677X.2021.1937261).
- Suryani, K.R., Zulfikar, R. and Vitria, A. (2021), "The SME condition during COVID 19 pandemic: financial and business overview", *International Journal of Science, Technology & Management*, Vol. 2 No. 3, pp. 718-727, doi: [10.46729/ijstm.v2i3.211](https://doi.org/10.46729/ijstm.v2i3.211).
- Taleb, N.N. (2007), *The Black Swan: the Impact of the Highly Improbable*, Vol. 2, Random House, New York, available at: https://www.stat.berkeley.edu/~aldous/157/Books/Black_Swan-sub.pdf.
- Tanor, L.A. and Purba, P.M. (2022), "Before and during the Covid-19 pandemic: Indonesia's pharmaceutical financial performance analysis", *SHS Web of Conference*, Vol. 149, 03045, ICSS 2022, doi: [10.1051/shsconf/202214903045](https://doi.org/10.1051/shsconf/202214903045).
- Tripathy, S.N. and Bisoyi, T.K. (2021), "Detrimental impact of COVID-19 pandemic on micro, small and medium enterprises in India", *Jharkhand Journal of Development and Management Studies*, Vol. 19 No. 1, pp. 8651-8660.
- Wijayanto, A. and Seno, A.H.D. (2021), "Comparative analysis of company financial performance between sub sectors in the consumers goods industry in Indonesia before and during the Covid-19 pandemic", *Journal of Economics, Finance and Management studies*, Vol. 4 No. 12, pp. 2427-2432, doi: [10.47191/jefms/v4-i12-03](https://doi.org/10.47191/jefms/v4-i12-03).

Further reading

- Achim, M.V.A., Vaidean, V.L., Sorin, B. and Florescu, D.R. (2020), "The lesson of COVID-19 pandemic within cultural context", doi: [10.2139/ssrn.3646503](https://doi.org/10.2139/ssrn.3646503), available at: <https://ssrn.com/abstract=3646503>
- Adam, N.A. and Alarifi, G. (2021), "Innovation practices for survival of small and medium enterprises (SMEs) in the COVID-19 times: the role of external support", *Journal of innovation and Entrepreneurship*, Vol. 10 No. 15, pp. 1-22, doi: [10.1186/s13731-021-00156-6](https://doi.org/10.1186/s13731-021-00156-6).
- Gregurec, L., Furjan, M.T. and Tomičić-Pupek, K. (2021), "The impact of Covid-19 on sustainable business models in SMEs", *Sustainability*, Vol. 13 No. 3, pp. 1-24, doi: [10.3390/su13031098](https://doi.org/10.3390/su13031098).
- Kumar, A., Syed, A.A. and Pandey, A. (2020), "How adoption of online resources can help Indian SMEs in improving performance during COVID-19 pandemic", *Test Engineering and management Journal*, Vol. 83, pp. 3394-3400, available at: <https://ssrn.com/abstract=3716696>
- Kurniawan, Maulana, A. and Iskandar, Y. (2023), "The effect of technology adoption and government financial support on sustainable performance of MSME during the Covid-19 pandemic", Vol. 10 No. 1, pp. 1-23, doi: [10.1080/23311975.2023.2177400](https://doi.org/10.1080/23311975.2023.2177400).
- Mahajan, Y. (2020), "Study of impact of coronavirus pandemic on small and medium enterprises (SME's) in India", *GIS Science Journal*, Vol. 7 No. 9, pp. 1-6, available at: <https://ssrn.com/abstract=3739311>
- Zutshi, A., Mendy, J., Sharma, G.D., Thomas, A. and Sarkar, T. (2021), "From challenges to creativity: enhancing SMEs' resilience in the context of Covid-19", *Sustainability*, Vol. 13 No. 12, pp. 1-16, doi: [10.3390/su13126542](https://doi.org/10.3390/su13126542).

Appendix

Table A1. Normality test of sample data (before pandemic)

| Performance indicators | Sectors distribution | Kolmogorov–Smirnov | | | Shapiro–Wilk | | |
|------------------------|----------------------|--------------------|----|--------------|--------------|----|--------------|
| | | Statistic | df | Significance | Statistic | df | Significance |
| TR _{BP} | Manufacturing | 0.357 | 56 | 0.000 | 0.296 | 56 | 0.000 |
| | Service | 0.279 | 35 | 0.000 | 0.615 | 35 | 0.000 |
| | Pharmaceutical | 0.305 | 9 | 0.016 | 0.780 | 9 | 0.012 |
| OP _{BP} | Manufacturing | 0.386 | 56 | 0.000 | 0.286 | 56 | 0.000 |
| | Service | 0.239 | 35 | 0.000 | 0.770 | 35 | 0.000 |
| NPR _{BP} | Pharmaceutical | 0.387 | 9 | 0.000 | 0.577 | 9 | 0.000 |
| | Manufacturing | 0.225 | 56 | 0.000 | 0.823 | 56 | 0.000 |
| | Service | 0.199 | 35 | 0.001 | 0.892 | 35 | 0.002 |
| CR _{BP} | Pharmaceutical | 0.277 | 9 | 0.044 | 0.858 | 9 | 0.090 |
| | Manufacturing | 0.220 | 56 | 0.000 | 0.599 | 56 | 0.000 |
| | Service | 0.188 | 35 | 0.003 | 0.771 | 35 | 0.000 |
| MC _{BP} | Pharmaceutical | 0.322 | 9 | 0.008 | 0.780 | 9 | 0.026 |
| | Manufacturing | 0.247 | 56 | 0.000 | 0.563 | 56 | 0.000 |
| | Service | 0.233 | 35 | 0.000 | 0.779 | 35 | 0.000 |
| | Pharmaceutical | 0.412 | 9 | 0.000 | 0.542 | 9 | 0.000 |

Note(s): TR, OP, NPR, CR and MC indicate Total Revenue, Operating Profit, Net Profit Ratio, Current Ratio and Market Capitalization. BP shows Before Pandemic

Source(s): Authors' calculation

Table A2. Normality test of sample data (during pandemic)

| Performance indicators | Sectors distribution | Kolmogorov–Smirnov | | | Shapiro–Wilk | | |
|------------------------|----------------------|--------------------|----|--------------|--------------|----|--------------|
| | | Statistic | df | Significance | Statistic | df | Significance |
| TR _{DP} | Manufacturing | 0.371 | 56 | 0.000 | 0.269 | 56 | 0.000 |
| | Service | 0.254 | 35 | 0.000 | 0.658 | 35 | 0.000 |
| | Pharmaceutical | 0.249 | 9 | 0.115 | 0.777 | 9 | 0.011 |
| OP _{DP} | Manufacturing | 0.412 | 56 | 0.000 | 0.285 | 56 | 0.000 |
| | Service | 0.267 | 35 | 0.000 | 0.714 | 35 | 0.000 |
| NPR _{DP} | Pharmaceutical | 0.348 | 9 | 0.002 | 0.670 | 9 | 0.001 |
| | Manufacturing | 0.245 | 56 | 0.000 | 0.820 | 56 | 0.000 |
| | Service | 0.205 | 35 | 0.001 | 0.816 | 35 | 0.000 |
| CR _{DP} | Pharmaceutical | 0.186 | 9 | 0.200 | 0.914 | 9 | 0.349 |
| | Manufacturing | 0.270 | 56 | 0.000 | 0.720 | 56 | 0.000 |
| | Service | 0.176 | 35 | 0.008 | 0.867 | 35 | 0.001 |
| MC _{DP} | Pharmaceutical | 0.343 | 9 | 0.003 | 0.809 | 9 | 0.026 |
| | Manufacturing | 0.233 | 56 | 0.000 | 0.616 | 56 | 0.000 |
| | Service | 0.296 | 35 | 0.000 | 0.645 | 35 | 0.000 |
| | Pharmaceutical | 0.356 | 9 | 0.002 | 0.541 | 9 | 0.000 |

Note(s): TR, OP, NPR, CR and MC indicate Total Revenue, Operating Profit, Net Profit Ratio, Current Ratio and Market Capitalization. DP shows During Pandemic

Source(s): Authors' calculation

Corresponding author

Amitava Mondal can be contacted at: amitavakalna@gmail.com

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com