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Review

Impact of Covid-19 on Firm Performance: A Systematic Literature Review Using PRISMA Framework

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Abstract: Amidst the massive expansion of Covid-19 literature, this paper aims to articulate existing findings, pinpoint practical implications, and provide promising directions for future exploration using a systematic literature review. Following the PRISMA framework, this research analyzed relevant 60 articles published in ABDC ranked and SCOPUS indexed journals during 2020-2024. Moreover, ABS rankings were used to provide an additional layer of quality assessment of sample articles. Using Excel, VOSviewer and Biblioshiny, the authors analyzed the corresponding studies, and results indicate that most research investigating this issue published in B ranked (as per ABDC), Q1 ranked (as per SCOPUS) and ABS-2 and 1 ranked (as per ABS) journals primarily by Elsevier and Emerald publishers. Besides, 43% of papers are Asia based (China contributing most), and the most used databases were CSMAR, BvD, Compustat, Datastream, and Prowess. Quantitative research methods such as Pooled OLS, Logistic regression, Fixed effect model, 2SLS, 3SLS, DID etc. dominated the literature, whereas qualitative methods such as surveys and conceptual studies were rarely used. Around half of the sampled papers used only accounting-based measures (ROA, ROE, NPM, EBITDA, EPS) as dependent variables. Despite the overwhelmingly negative impact of Covid-19 on firm performance, 16.67% of the sampled papers reported mixed results in various regions and countries due to several firm-specific, macro-economic, and industry-specific factors. These articles provide important implications for managers, board of directors, investors, and regulators. Practitioners should adopt a sector- and region-specific approach to combat pandemics. Future researchers may focus on conducting both short-term and long-term studies incorporating factors like government stimulus package, business sensitivity to multiple phases of Covid-19 and the country's preparedness using longitudinal studies, surveys, meta-analysis, in-depth interviews, observations, and case studies to fully comprehend the effects of Covid-19.

Keywords: Covid-19; Firm Performance; Financial Crisis; Systematic Literature Review; PRISMA

1. Introduction

The highly contagious coronavirus (Covid-19) originated in Wuhan in December 2019 and swiftly spread from Asia to North America, Europe, and ultimately to the rest of the world in the first quarter of 2020 (Abbas & Nainggolan, 2023) [1]. To prevent the spread of Covid-19, countries across the world implemented policies like lockdown, large-scale quarantines, travel restriction, and workplace closure, which caused a substantial decline in purchasing power in stagnating economies (Shen *et al.*, 2020 [2]; Cui *et al.*, 2021 [3]; Gajewski & Kutan, 2023 [4]). Covid-19 disrupted local and global financial health to the extent where it is termed as the worst worldwide recession after the

world war (Cui *et al.*, 2021) [3]. Nonetheless, this economic crisis is separate from past exogenous economic shocks. For example, the economic crisis of the 1970s and the global financial crisis of 2008 were triggered by soaring oil prices and the subprime mortgage crisis, respectively, whereas the Covid-19 aftermath economic crisis was induced by both demand- side and supply-side shocks (Shen *et al.*, 2020) [2]. Stimulating economic activity was challenging, as firms that depend upon face-to-face interactions for producing goods or giving services are the ones that were worst hit in the pandemic (Igan *et al.*, 2023) [5].

The onset of the Covid-19 pandemic has become a critical point of study for scholars to study these multifarious effects of the pandemic on business firms (Cui *et al.*, 2021 [3]; Hu & Zhang, 2021 [6]; Ren *et al.*, 2021 [7]). Firstly, studies conducted at the industry level reveal that the tourism, hospitality, airlines, shipping, and insurance sectors faced a severe downturn in performance due to Covid-19 (Gavalas *et al.*, 2022 [8]; Wang *et al.*, 2022 [9]; Mintah & Gulko, 2023 [10]; Defung *et al.*, 2024 [11]). Additionally, Covid-19 is labeled as a "game-breaker" for wineries' profitability (Faria *et al.*, 2023) [12]. On the contrary, real estate firms with broader geographical footprints and more diversified property holdings performed better throughout the crisis period than others (Chu *et al.*, 2021) [13]. The healthcare sector's Covid-19 effect depended on the level of governance and regulatory frameworks, as well as the economic categorization of the country (Toumi *et al.*, 2023) [14]. Despite the lockdown and workplace closures triggered by Covid-19, the financial performance of ICT companies like IBM, Samsung, and Canon as well as retail companies like Amazon and Walmart was unaffected (Qin *et al.*, 2022 [15]; Sierotowicz, 2022 [16]). At the regional level, (Ren *et al.* 2021) [7] find that the pandemic worsens performances in different provinces of China, but their detrimental impacts were temporary as pandemic was gradually under control with strict lockdown. Moreover, the firms in 14 of the G-20 countries exhibited a considerable increase in performance, but the remaining countries showed decline (Atayah *et al.*, 2022) [17]. Poland provided evidence that the pandemic had an adverse effect on western firms but not on eastern ones (Gajewski & Kutan, 2023) [4]. But Iranian firms (Tarighi *et al.*, 2023) [18] and MSMEs in Pakistan (Shafi *et al.*, 2020) [19] faced more dire circumstances in terms of supply chain disruption and decrease in demand during Covid-19. Lastly, the relationship between firm performances and working capital (Pant *et al.*, 2023 [45]), accounting practices (Cui *et al.*, 2021) [3], operational flexibility (Shafi *et al.*, 2020) [19], employee compensation (Mahssouni *et al.*, 2022) [20], and other corporate governance practices (Kumar & Zbib, 2022 [21]; Anas *et al.*, 2023 [22]) during pandemic were also explored in the extant literature.

Nonetheless, Covid-19 literature is still unfolding, and the present comprehension of the outcome is still dispersed across several study domains. This massive expansion of Covid-19 literature creates a need for a systematic literature review to articulate existing findings and understand the overall picture. In this paper, we aim to answer the following research questions via a systematic literature review:

- RQ1: What are the characteristics and findings of the Covid-19 and firm performance literature?
- RQ2: How to overcome challenges of future pandemics learning from Covid-19 experience?
- RQ3: What are the main future research directions from extant literature?

We use Dimensions database searching keywords "Covid 19" as well as "firm performance" or "financial performance" to retrieve results that have a combination of these keywords in the abstract or title of the journal papers. The Dimensions database provides advance search and filter options, which helps to build a primary listing of peer-reviewed research outputs suitable for PRISMA

framework without the need of paying database subscriptions (Hook *et al*., 2018) [67]. As Covid-19 is a recent phenomenon, all retrieved papers were from the year 2020 and beyond (up to 2024). Altogether, 876 papers came up in the initial search. Only ABDC ranked and SCOPUS indexed journals were kept, and the rest was discarded to maintain the quality of the sampled literature. After applying the PRISMA framework, we narrowed down to 60 key papers as our final sample. This research is different from the research by Koutoupis *et al.* (2021) [22] where the authors examined the relationship between corporate governance and Covid-19. Our research is more comprehensive as it covers the relationship between firm performance and Covid-19 as well as the corporate governance factors that affect this relationship from articles published during 2020-2024.

The remainder of this paper is ordered as follows: Section 2 discusses relevant theories for the study. Section 3 provides an explanation of research methodology. In addition, results and discussions are reported in Section 4, and Section 5 mentions avenues for future research. Finaly, the paper is concluded in Section 6 with a review of its central insights and policy implications.

2. Theoretical Framework

Researchers are trying to pinpoint the multifarious impact of the pandemic using various theories. To begin, the Theory of Crisis Management suggests that in erratic and unpredictable environments, firms should garner resources and develop capacity to face detrimental effects of external shocks (Marsden, 2010) [24]. Thus, it might be interesting to see which characteristics of firms faced a lower negative impact of Covid-19. Furthermore, firms may improve organization structure and human, financial, social, and technological capital to build resilience for each crisis (Fromhold-Eisebith, 2015) [25]. This study's most important takeaway is that countries must decide on crisis management strategies that are tailored to their structure. The Organizational Information Processing Theory (OIPT) states how firms can efficiently organize and use information, particularly when responding to environmental ambiguity (Galbraith, 1974) [26]. Moreover, organizational information processing capability is essential in reducing risks as well as developing contingency plans for supply chain disruptions (Fan *et al.*, 2016) [27]. Researchers also argued that corporate outcomes are primarily determined by firm characteristics and robust resilience is contingent upon the firm's financial fundamentals (Kumar & Zbib, 2022 [21]; Abbas & Nainggolan, 2023 [1]).

According to The Real Options Theory, firm managers are inclined to postpone important investment as uncertainties increase, which could culminate in lost potential profitable ventures (Ming *et al.*, 2016) [28]. Some researchers reinforce Agency Theory, proposing that CEO duality reduces firm value as CEO's dual role may prioritize personal gain above firm success (Wang *et al.*, 2012 [29]; Tang, 2017 [30]; Naseem *et al.*, 2019 [31]; Musallam, 2020 [32]). This is parallel to the Entrenchment Theory, that implies CEO may suppress information from other board members regarding insufficient commercial deals and directors may feel inclined to invest in low-return ventures (Tarighi *et al.*, 2023) [18]. Stewardship Theory proponents, on the contrary, support that the CEO's duality may enhance a company's financial performance. An individual's decision-making ability may strengthen when they hold the dual roles of CEO and chairman of the board, as there will be less ambiguity involved in formulating a company's plans (Christensen *et al.*, 2010 [33]; Kyere & Ausloos, 2021 [34]). Moreover, CEO duality may improve company profitability when businesses experience high information-gathering costs during unpredictable periods, such as the Covid-19 pandemic (Hassan *et al.*, 2023 [35]). Lastly, corresponding to The Behavioral Theory of the firm

slack—especially in the form of available cash is helpful for navigating economic downturns, reducing internal organizational conflict, and enabling the investigation of volatile company alternatives (Devine, 1964 [36]; Bourgeois III, 1981 [37]; Kim & Bettis, 2014 [38]).

The relevant theories that can explain the potential impact of Covid-19 and firm performance can be summarized by the below diagram:

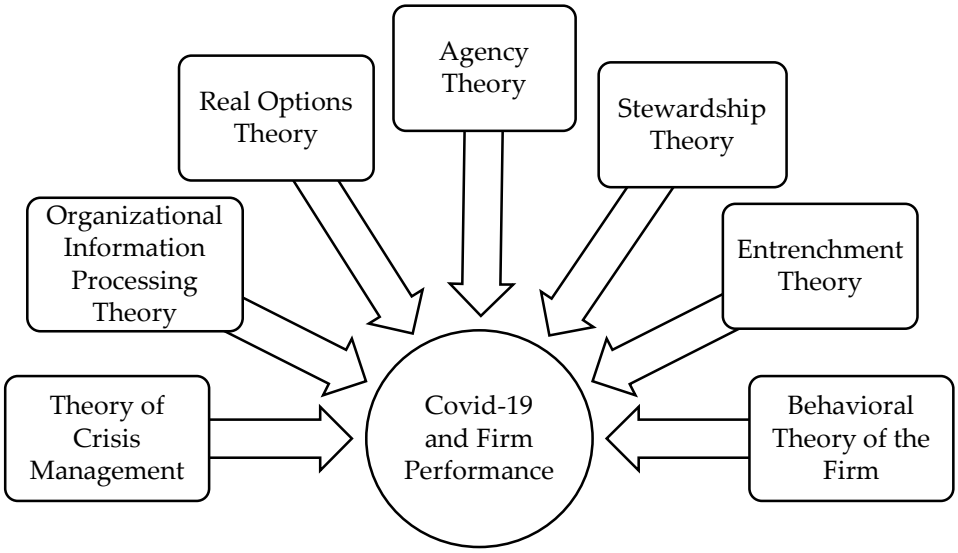


Figure 1. Theories linked to the potential impact of Covid-19 and firm performance.

3. Research Methodology

We adopted the Preferred Reporting Items for Systematic Reviews (PRISMA) framework for conducting this systematic literature review in this paper, which warrants transparency and reliability (Moher *et al.*, 2010) [39]. This approach constitutes a structured four step process where the first step is identification. Initial search is done using keywords "Covid 19" and "firm performance" in the Dimensions database, which provides global research data of 140 million publications. Moreover, Dimensions database has sophisticated search and filter options and visual tools, along with a primary listing of peer-reviewed research outputs without the need of institutional database subscriptions (Hook *et al.*, 2018) [67]. The Boolean Operator "and" makes sure both the keywords are present in the abstract or title of the journal papers. For achieving a robust list, we alternately searched using keywords "Covid 19" and "financial performance". No time limit is set as Covid is a recent phenomenon; all the papers were from the year 2020 and above. We then merge the two sets of journal papers and remove the duplicates. Journal papers published in only English language were considered. Only ABDC ranked and SCOPUS indexed journal papers are kept, the rest is discarded to ensure the quality of the sampled papers. ABDC-ranked journals have global recognition among business school faculty, deans, and researchers (Hirschberg & Lye, 2020) [68]. Additionally, it has a large database of ~2680 journals, which have been approved by panel experts based on the journal's editorial standard, peer review process, quality metrics, and impact factors, ensuring a rigorous quality evaluator. The ranking focuses on evaluating journal quality for business research, making ABDC ranking a benchmark in Australasia as well as in global academia (Hirschberg & Lye, 2020 [68]; Jaafar *et al.*, 2020 [69]). Therefore, considering the ABDC-ranked journals has enabled us to get a

sizable pool of high-quality publications with wider geographical representation. We further tested the robustness of our sampled publications by cross-referencing the initially identified papers with the SCOPUS index that has a wider global recognition and focuses on citation-based metrics. SCOPUS allows countries to make their research output more visible internationally (Erfanmanesh *et al.*, 2017 [70]; Thelwall & Sud, 2022 [71]). Furthermore, we manually screened the title and abstract of the paper to select papers that are relevant to the research scope. Only papers related to business, especially in the areas of Finance, Accounting and Economics, are kept. Our final sample includes 60 published journal papers. Microsoft Excel, EndNote, VOSviewer, and Biblioshiny software have been used for data extraction and analysis.

Methodological process for paper selection is given below:

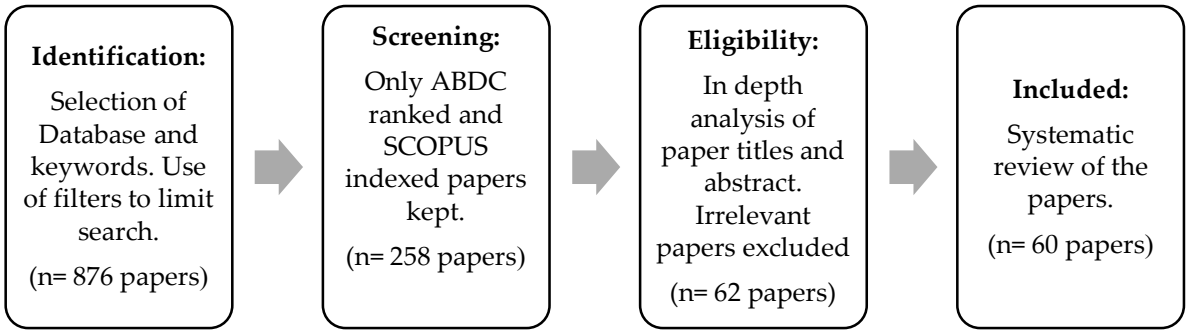


Figure 2. Literature selection process using PRISMA framework.

4. Results and Discussion

Our analyzed papers start from the year 2020, as Covid-19 arrived at the end of 2019 and impacts were visible from early 2020. Table 1, Panel A presents the descriptive statistics, namely the number of papers by year and the ABDC ranking (A*, A, B, and C, with A* being the highest quality) of the final sample. The highest number of papers (20) was published in the year 2022 while the lowest (2) was in the year 2024. Of the whole sample, 14 papers (23.33%) and 33 papers (55%) respectively are published in journals with an A and B ranking, while 12 papers are from C ranked journals (20%) and 1 paper is from A* ranked journal (1.67%). Figure 3 shows the paper categorizations by year and their ABDC rankings graphically. This reveals that Covid-19, and firm performance related papers were predominantly published in B ranked journals. Moreover, in the years 2022 and 2023, most papers were published as there was a lag to examine the relationship between Covid-19 and firm level outcomes. The meager number of publications in 2024 is justified as the year is still unfolding at the time of this research. Furthermore, we were able to further test the robustness of our samples papers by comparing journals ranking with the SCOPUS index ranking (ranked Q1, Q2, Q3, and Q4, with Q1 representing the top 25% of journals based on CiteScore or impact factor). Subsequently, to provide an additional layer of quality assessment, we considered the journals' ABS rankings (ranked ABS-4, ABS-3, ABS-2, and ABS-1, with ABS-4 being the highest quality). Table 1, Panel B displays corresponding journals of the sample papers and their ABDC, SCOPUS and ABS ranking. The journals that published most papers regarding firm performance and Covid-19 fall under ABS-2 and ABS-1 categories. Nevertheless, most of the sampled journals are Q1 in SCOPUS index indicating these journals are highly cited. Moreover, this table shows whether a paper is open access or not where "yes" means articles in these journals are freely available without any subscription fee and

"no" means otherwise. Unfortunately, very few journals are open access, meaning readers need to purchase a subscription to read the research articles. On a similar note, Figure 4 exhibits the number papers by publishers, and most of papers are published by Elsevier (15) and Emerald (14), respectively. These are leading publishers of blind peer reviewed academic research papers.

Table 1. Descriptive Statistics.

Panel A. Sampled papers by year and ABDC ranking.

Journal Rank	Year					Total	Percentage
	2020	2021	2022	2023	2024		
A*	0	0	1	0	0	1	1.67%
A	1	5	6	2	0	14	23.33%
B	3	8	8	12	2	33	55.00%
C	0	2	5	5	0	12	20.00%
Total	**4**	**15**	**20**	**19**	**2**	**60**	**100.00%**

Panel B. Total journals, publishers and rankings of 60 sampled papers.

S/N	Journal Name	Publisher	N of articles	ABDC	Scopus	ABS	Open Access
1	Journal of Risk and Financial Management	MDPI	10	B	Q1	N/A	Yes
2	Finance Research Letters	Elsevier	3	A	Q1	ABS-2	No
3	Benchmarking An International Journal	Emerald	2	B	Q1	ABS-1	No
4	Economic Analysis and Policy	Elsevier	2	B	Q1	ABS-2	No
5	Emerging Markets Finance and Trade	Taylor & Francis	2	B	Q1	ABS-2	No
6	International Review of Financial Analysis	Elsevier	2	A	Q1	ABS-3	No
7	Journal of Global Operations and Strategic Sourcing	Emerald	2	C	Q1	N/A	No
8	Journal of Public Affairs	Wiley-Blackwell	2	B	Q1	ABS-1	No
9	Accounting and Finance	Wiley-Blackwell	1	A	Q1	ABS-2	No
10	Accounting Research Journal	Emerald	1	B	Q1	ABS-2	No
11	Applied Economics Letters	Taylor & Francis	1	B	Q2	ABS-1	No
12	Asian Academy of Management Journal	Penerbit Universiti Sains Malaysia	1	C	Q3	N/A	Yes
13	Business Strategy and the Environment	Wiley-Blackwell	1	A	Q1	ABS-3	No

S/N	Journal Name	Publisher	N of articles	ABDC	Scopus	ABS	Open Access
14	Case Studies on Transport Policy	Elsevier	1	C	Q1	N/A	No
15	Cogent Economics & Finance	Taylor & Francis	1	B	Q2	N/A	Yes
16	Corporate Governance	Emerald	1	C	Q1	ABS-2	No
17	Eastern European Economics	Taylor & Francis	1	B	Q3	ABS-1	No
18	Employee Relations	Emerald	1	B	Q1	ABS-2	No
19	FIIB Business Review	Sage	1	C	Q1	ABS-1	No
20	German Economic Review	Wiley-Blackwell	1	B	Q3	ABS-2	No
21	Global Business Review	Sage	1	C	Q1	ABS-1	No
22	Global Journal of Flexible Systems Management	Springer	1	A	Q1	ABS-2	No
23	International Finance	Wiley-Blackwell	1	B	Q2	N/A	No
24	International Journal of Contemporary Hospitality Management	Emerald	1	A	Q1	ABS-3	No
25	International Journal of Monetary Economics and Finance	Inderscience	1	C	Q3	N/A	No
26	International Journal of Productivity and Performance Management	Emerald	1	B	Q1	ABS-1	No
27	International Journal of Social Economics	Emerald	1	B	Q1	ABS-1	No
28	International Review of Economics & Finance	Elsevier	1	A	Q1	ABS-2	No
29	Investment Management and Financial Innovations	Business Perspectives Ltd	1	B	Q1	N/A	Yes
30	Journal of Accounting in Emerging Economies	Emerald	1	B	Q1	ABS-2	Yes
31	Journal of Behavioral and Experimental Finance	Elsevier	1	A	Q1	ABS-1	No
32	Journal of Corporate Finance	Elsevier	1	A*	Q1	ABS-4	No
33	Journal of Financial Reporting and Accounting	Emerald	1	C	Q1	ABS-1	No
34	Journal of Modelling in Management	Emerald	1	C	Q2	ABS-1	No

S/N	Journal Name	Publisher	N of articles	ABDC	Scopus	ABS	Open Access
35	Journal of Small Business and Enterprise Development	Emerald	1	C	Q1	ABS-2	No
36	Journal of Small Business Management	Taylor & Francis	1	A	Q1	ABS-3	No
37	Journal of Small Business Strategy	Middle Tennessee State University	1	C	Q2	N/A	Yes
38	Journal of Social Entrepreneurship	Taylor & Francis	1	B	Q1	ABS-2	No
39	Journal of the Japanese and International Economies	Elsevier	1	A	Q1	ABS-2	No
40	Research in Economics	Elsevier	1	B	Q2	ABS-1	No
41	Research in International Business and Finance	Elsevier	1	B	Q1	ABS-2	No
42	Small Business Economics	Springer	1	A	Q1	ABS-3	No
43	The North American Journal of Economics and Finance	Elsevier	1	B	Q1	N/A	No
	Grand Total		**60**				

Notes: Journal rankings are updated as per the latest rankings of ABDC, Scopus index and ABS classification. (The ABDC rankings are A*, A, B, and C, with A* being the highest quality; the Scopus rankings are Q1, Q2, Q3, and Q4, with Q1 being the highest quality; and the ABS rankings are ABS-4, ABS-3, ABS-2, and ABS-1, with ABS4 being the highest quality). Number of sampled articles published in different ABDC ranked journals (A*=1, A=14, B=33, C=12). Number of sampled articles published in different SCOPUS journals (Q1=50, Q2=6, Q3=4, Q4=0). Number of sampled articles published in different ABS ranked journals (ABS-4=1, ABS-6=, ABS-2=19, ABS-1=14; N/A= not included in the ABS index). Open access status: "yes" means articles in these journals are freely available without any subscription fee and "no" means otherwise.

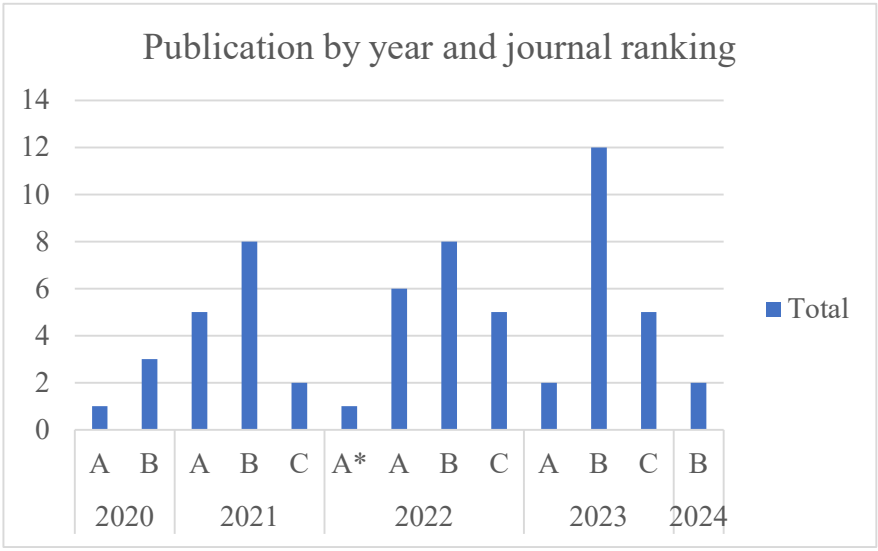


Figure 3. Number of sampled papers published by year and journals' ABDC rankings.

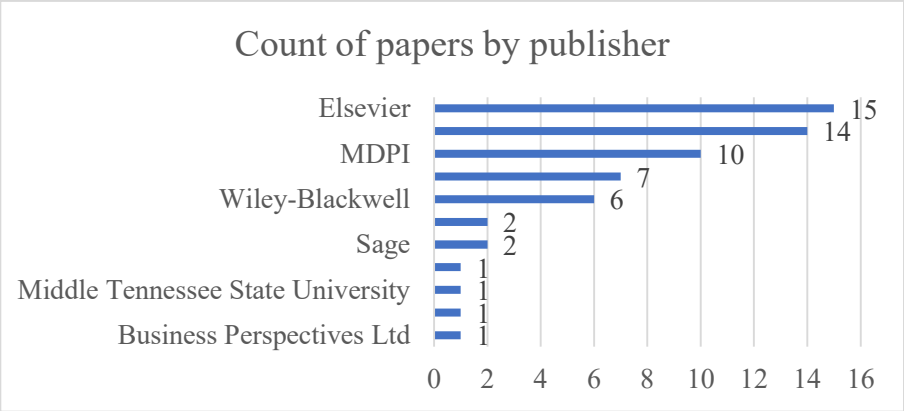


Figure 4. Number of publications by publisher.

For further analysis, Figure 5-8 demonstrates bibliometric mapping. Figure 5 illustrates network visualization by co-citation and full counting method using VOSviewer software. Sampled papers are divided into 4 clusters. Cluster 1 constitutes 23 papers, followed by clusters 2, 3, 4 with 22 papers, 18 papers, and 18 papers, respectively. Here, the minimum number of citations is chosen to be three and the minimum cluster size is selected to be six. In addition, Figure 6 reveals the word cloud of the abstracts. This is a graphical demonstration of single word frequency that yields greater prominence to words that appear repeatedly in the abstracts of the final sampled papers. In other words, the words with the highest frequency are the largest font in the graph. The most used word here is "performance".

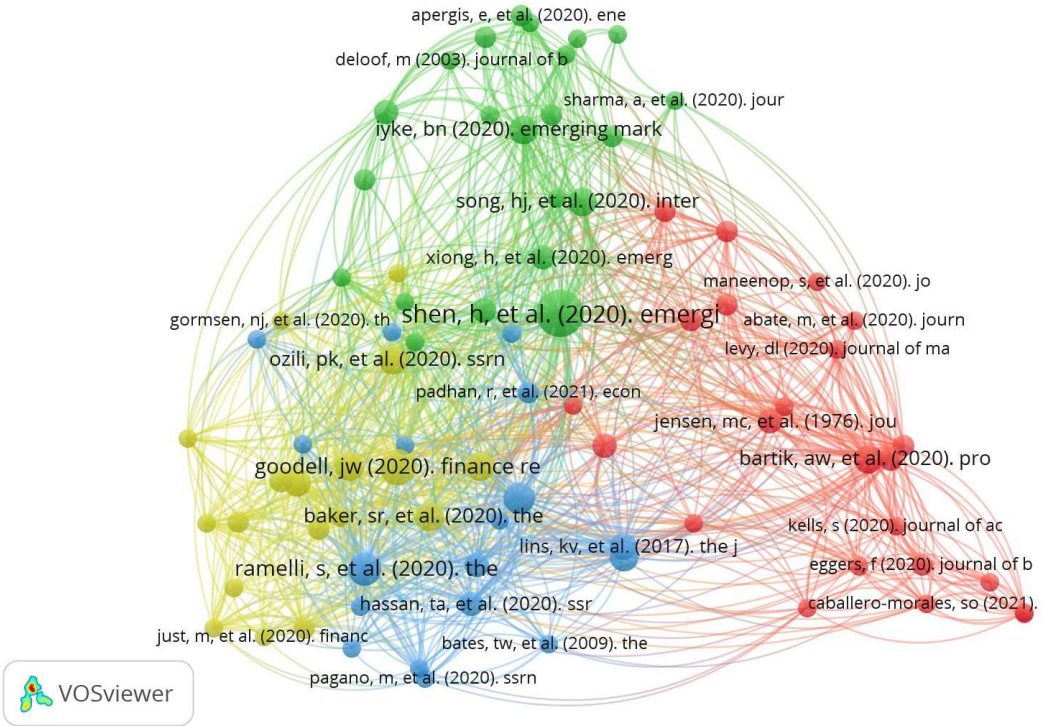


Figure 5. Network visualization of sampled papers' co-citation.

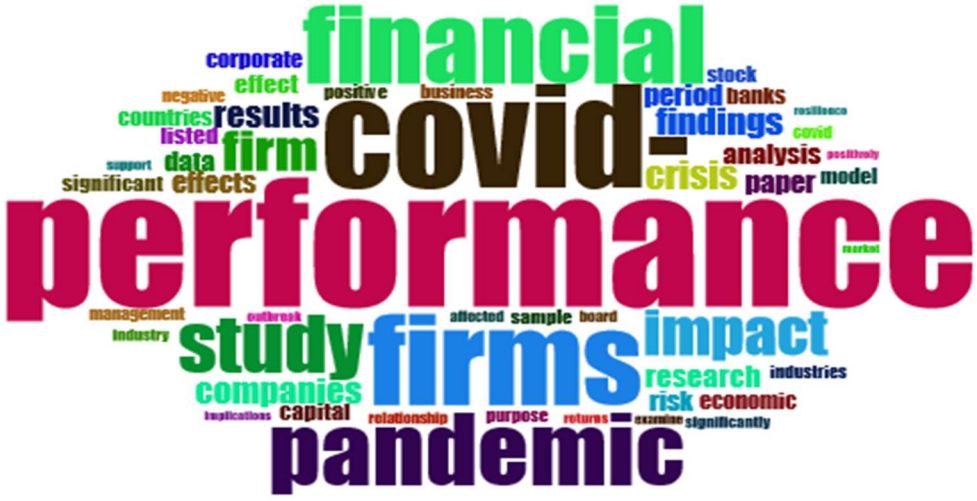
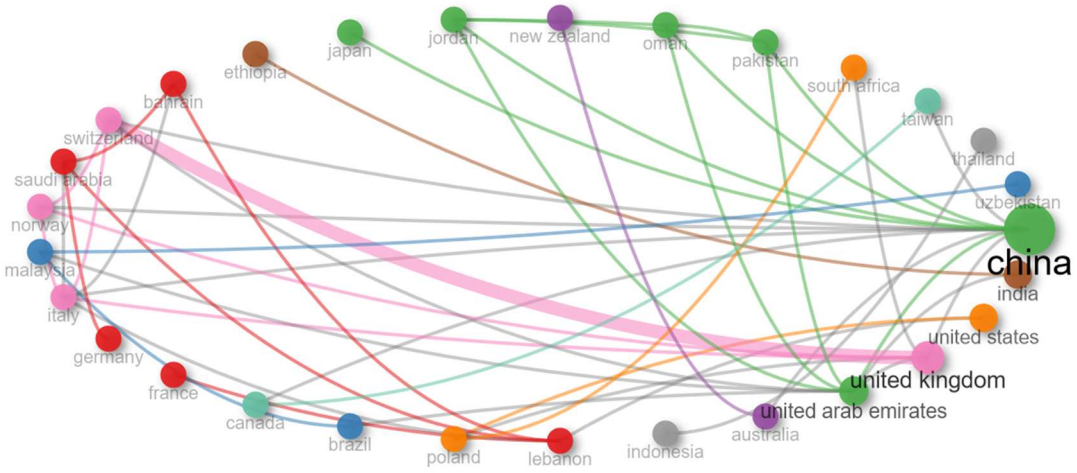
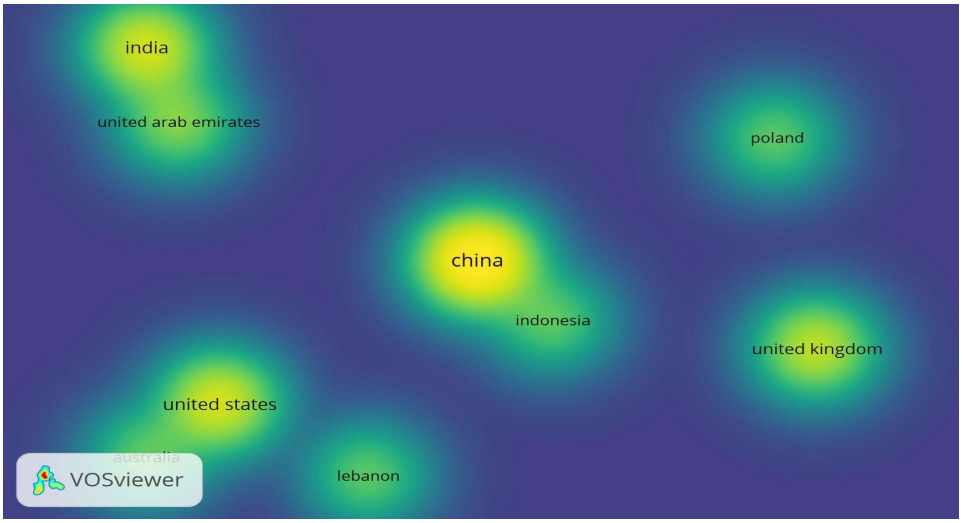


Figure 6. Word-Cloud from abstracts of the sampled papers.



Panel A. Collaboration network among countries using walk-trap clustering algorithm.



Panel B. Citation mapping using density visualization.

Figure 7. Bibliometric mapping by countries **(Panel A and B).**

Furthermore, Figure 7 demonstrates bibliometric mapping by countries. Figure 7: Panel A shows collaboration networks among countries. The dominant countries dictating the Covid-19 and performance research are China, United Kingdom, United States, United Arab Emirates, and India. Similar results are revealed by Figure 7: Panel B, which highlights citation mapping by countries which have at least three documents per country. The highest density is formed by 12 papers from China with a total of 998 citations. Although Covid-19 created havoc worldwide, it originated from China and the aforementioned papers investigated different aspects of Covid-19 in the context of China. This is not surprising, as being an economic giant with averaged 9% GDP growth and 1.4 billion population (World Bank Group, 2024) [64], China's research output as measured by the quantity of total published papers has augmented steadily over the years compared to any other western or eastern country (Wagner, 2023) [65]. Nevertheless, USA, UK, UAE, and India are also dominating the extant literature, and multi-country studies based on G-7, G-20 and MENA regions are commonly found as well. Finally, Figure 8 pinpoints a three-field plot of final sampled papers, which shows the relative contributions of the top authors and journals in overall research output. The left column represents top authors, while the middle columns and right column represent top publication sources and affiliated institutions, respectively. Here, 10 out of the 60 sampled papers are published by an open access journal named "Journal of Risk and Financial Management" (ABDC: B; ABS-2 and Q1 SCOPUS indexed).

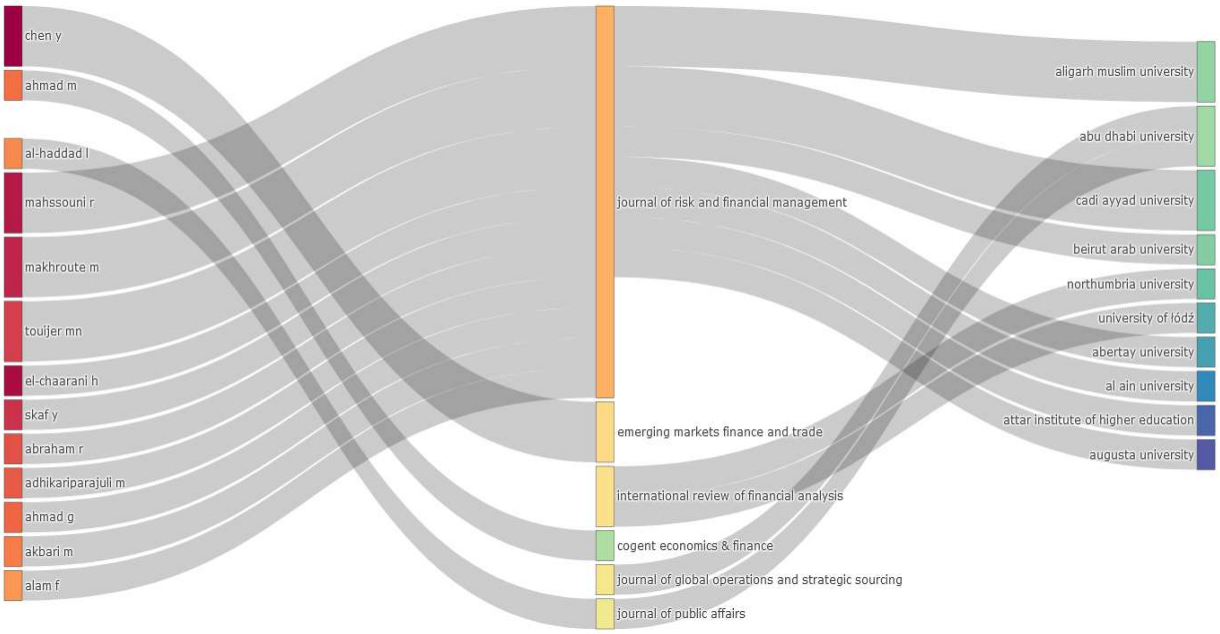


Figure 8. Three-fields plot of sampled papers (top authors, publication source and affiliated institutions).

Our sample papers' classifications by regions, research methods, dependent variables, databases, and primary results are detailed in Table 2, Panel A reports that remarkably, the majority of empirical research on the impact of Covid-19 on firm performance was carried out in Asia (43.33%) and North America (16.67%). Some studies focused on companies that operated in Europe (15.00%), while others examined the performance of firms in multi regions to assess the impact across nations (23.33%). Table 2, Panel B indicates the dependent variables of the sample papers. Accounting-based variables, including profit margin, sales and revenue growth, ROA, ROE, and EBITDA, were applied in 46.67%

of the papers. Conversely, market-based variables, including stock return performance, abnormal return, and SD of stock return, were taken into account in 16.67% of publications. Furthermore, our examination of the dependent variables shows that 28.33% of papers included both market and accounting variables in their research. The remaining handful of papers focused on surveys or exploratory methods studying latent variables.

Table 2. Analysis of sampled papers.

Panel A: Region	**N of articles**	**Percentage**
Asia	26	43.33%
North America	10	16.67%
Europe	9	15.00%
Africa	1	1.67%
Multi Region	14	23.33%
Grand Total	60	100.00%

Panel B: Dependent variable	**N of articles**	**Percentage**
Accounting based measures	28	46.67%
Market based measures	10	16.67%
Mixed measures	17	28.33%
N/A	5	8.33%
Grand Total	**60**	**100.00%**

Panel C: Database used	**N of articles**	**Percentage**
CSMAR	9	15.00%
Orbis/BvD	8	13.33%
Compustat	4	6.67%
Datastream	3	5.00%
Prowess	3	5.00%
Annual reports	3	5.00%
Bloomberg	2	3.33%
CRSP	2	3.33%
Refinitiv Eikon	2	3.33%
Others	17	28.33%
N/A	11	18.33%
Grand Total	**64***	**106.67%**

* Some research papers use multiple databases.

Panel D: Research method	**N of articles**	**Percentage**
Regression	39	65.00%
Survey	6	10.00%
Event Study and Regression	5	8.33%
Survey and Regression	3	5.00%
Event Study	2	3.33%

Exploratory Study	1	1.67%
Others	3	6.68%
Grand Total	**60**	**100.00%**

Panel E: Results	**N of articles**	**Percentage**
Negative	28	46.67%
N/A	20	33.33%
Mixed	10	16.67%
Neutral/No relationship	2	3.33%
Grand Total	60	100.00%

Panel F: Mean TC (Total Citations) per article and year				
Year	**Mean TC per Article**	**N of articles**	**Mean TC per Year**	**Citable Years**
2020	189.00	4	37.80	5
2021	37.87	15	9.47	4
2022	15.25	20	5.08	3

The databases used in our sample articles are listed in Table 2, Panel C. Results reveal that CSMAR is the most commonly used database (15.00%), followed by Orbis/BvD (13.33%), Compustat (6.67%), and Datastream (5.00%). Several other databases were identified in papers, such as: Bloomberg, CRSP, Prowess, Amadeus, BoardEx, FactSet, FiinPro, Official Fiscal Reports, Polish Local Database, Refinitiv Eikon, WBES, WSJ.[1] In terms of research method, Table 2, Panel D shows that 65% of studies adopted the Regression approach, using secondary level data from company reports. On the other hand, 10% of the research gathered and examined primary level survey data. A few studies from our sample papers employed a combination of methodologies (e.g., 6.67% of papers combined Event Study and Regression, while 5.00% of papers combined Survey and Regression to analyze pandemic's impact on firm's operations. Exploratory study, case study and non-parametric tests are rarely used to conduct these research papers.

Furthermore, Table 2, Panel E summarizes the results of Covid-19 on the performance of business firms, as stated in the sample 60 papers. According to 46.67% of articles, Covid-19 had a substantial negative effect on firms' performance, triggering extensive disruptions in supply chains, consumption behavior, financing, and operations, with varying outcomes for various sectors and regions. Although it is intuitive to expect negative effect of Covid-19 on firm performance, only a 16.67% of studies claimed that Covid-19 had a heterogenous impact in various regions and countries (Atayah *et al.*, 2022 [17]; Gajewski & Kutan, 2023) [4] and only 3.33% of papers found no distinct pattern or relationship (Qin *et al.*, 2022 [15]; Sierotowicz, 2022 [16]).[2] The mixed result was attributed to several firm-specific, macro-economic, and industry-specific factors. Heitmann *et al.* (2023) [72] found that banks behaved heterogeneously during Covid-19 as per their financial performance and risk indicators due to the differences in firm-specific characteristics. For example, the authors noted that performance declined more for banks with low profitability and poor cost efficiency, which

[1] In Table 2, Panel C, N/A represents papers which use primary data sources such as Surveys and Interviews.

[2] In Table 2, Panel E, N/A represents the papers that looked at how the relationship between firm performance and other variables reacted during Covid-19.

ultimately affects the banks' capacity to handle the pandemic crisis. Similarly, (Lu *et al.* 2022) [63] the performance of firms with better sustainability is less reduced due to Covid-19 compared to their counterparts. In other words, stronger risk assessment, sustainability performance, and financing strategies contributed to increased resilience in firms during the pandemic (Lu *et al.,* 2022 [63]; Heitmann *et al.,* 2023 [72]). Moreover, ununified regional crisis response strategies and government initiatives, supply chain distributions, and infrastructural differences led to inconsistent impacts of Covid-19 (Atayah *et al.,* 2022 [17]; Szczygielski *et al.,* 2022 [41]). Finally, certain industries, such as pharmaceuticals, health care technology, online and direct marketing retail sector, and biotechnology, performed better, owing to the nature of goods and services (essential vs. non-essential) and demand (Szczygielski *et al*., 2022 [41]; Wang *et al.,* 2022 [58]). Finally, Panel F shows the total average citation per article and year. The most cited year is 2020 with on average 189 citations per article.

We further examined the total number of citations to assess the significance of each paper, and Table 3 highlights the twelve most cited papers from our sample set where each of the papers received a minimum of 30 citations. The table reports journal and publisher name, citation number, as well as research methods, key findings, strengths and weaknesses of these most cited papers. The top three of the articles were published in the early stages of the pandemic in 2020–2021, which may have been the reason that they gathered the most citations than their recent counterparts. Additionally, the majority of the papers examined the direct relationship between Covid-19 and firm performance through analyses of accounting based (i.e., ROA, ROE, NPM, EBITDA, changes in sales) and market based (i.e., Tobin's Q, stock return) variables (Rababah *et al*., 2020 [40]; Shen *et al*., 2020 [2] ; Hu & Zhang, 2021 [6]; Atayah *et al*., 2022 [17]; Golubeva (2021) [56]). Meanwhile, other papers investigated the relationship between various variables (uncertainty, operating flexibility, accounting conservatism, and other corporate governance factors) and firm performance during Covid-19 or examined whether firms with specific characteristics (i.e., more conservative in accounting, highly operationally flexible, more sustainable) performed better during pandemic (Cui *et al.,* 2021 [3]; Liu *et al.,* 2021 [43]; H. H. Nguyen *et al.,* 2021 [62]; Lu *et al.,* 2022 [63]).

In addition, an overwhelmingly large sample of the studies used quantitative research methods such as Pooled OLS regression, fixed effect model, logistic regression, ARCH/GARCH model, two stage least squares, three stage least squares, difference in difference (DID) model etc., while a few used qualitative methods like survey and conceptual study. This is also consistent with our previous analysis reported in Table 2, Panel D which further corroborates that the extant literature on this issue is mainly quantitative. However, some papers lack corrections for potential biases such as endogeneity. In addition, a limited sample of merely one year (i.e., 2020) or a lack of generalization of the findings and the absence of critical independent variables may be deemed as limitations of a few articles. Moreover, some papers only captured the early effect of Covid-19 whereas many other factors, such as stimulus packages, level of country restrictions, and negative or positive news were excluded. The ever-changing scenario of Covid-19 requires both short-term and long-term studies to fully comprehend the impact of this pandemic.

Four papers, including the top most cited paper by Shen *et al.,* (2020) [2]; were undertaken in a single country, i.e., China (Shen *et al.,* 2020 [2]; Rababah *et al.,* 2020 [40]; Cui *et al.,* 2021 [3]; Liu *et al.,* 2021 [43]), while the others focused on evidence from multi-country such as G-20, G-7, MENA and other global regions (Atayah *et al.,* 2022 [17]; Hu and Zhang (2021) [6]; Szczygielski *et al.,* 2022 [41]). As China is the epicenter of this pandemic and a global giant economy, it is not unexpected that many

researchers focused first on China to learn about the effect of Covid-19. However, the strictly controlled socio-economic scenario may not make China generalizable to other economies. Hu and Zhang (2021) [6] and Atayah *et al.* (2022) [17] performed regression analysis on cross-country level firm data and found heterogeneous impact of Covid-19 in healthcare and logistics firms' financial performances. Despite the pandemic, healthcare firms in countries with stronger financial services, medical, and governance systems thrived. However, it is important that readers remain cautious about interpreting these findings, as unlike other industries, healthcare and logistics firms may have faced a rise in demand during the center of the pandemic period. Additionally, Atayah *et al.* (2022) [17] found logistics firms of Saudi Arabia, Germany, Korea, Russia, Mexico, and the UK had a significantly negative relationship with Covid-19 compared to the other 14 countries from G-20 countries. These inconsistencies in findings were caused by infrastructure differences, and various policies that different governments adopted to address supply chain bottlenecks and prioritize the movement of goods. Also, Szczygielski *et al.* (2022) [41] conducted regression analysis on a sample of 68 global industries and revealed that essential products and services related industries such as: retailing of food and staples, household goods, and telecommunications were least affected by Covid-19, while the industries of energy, consumer finance, and airlines suffered because of lockdown and policy restrictions. This further emphasizes the need for catering to differences in industries and regions for studying the effect of crises such as Covid-19.

Table 3. Most cited sampled papers.

S/N	Author & Year	Title of articles	Name of Journal & Publisher	Times cited	Research Method	Key Findings (KF), Strength (S) and Weakness (W)
1	**Shen *et al.* (2020) [2]**	The impact of the Covid-19 pandemic on firm performance	Emerging Markets Finance and Trade (Taylor & Francis)	502	Regression Analysis (Pooled OLS, DID)	**KF:** Negative impact of Covid-19 was more significant in firms with lower sales income and investment size. **S:** Robust econometric models for an in-depth analysis across Chinese industries and regions. Investigates mechanism underlying the Covid impact. Applied DID model for endogeneity. **W**: Only used accounting-based performance indicators. Examined pandemic shock in the first quarter of 2020, which may not fully represent the long-term effects.

S/N	Author & Year	Title of articles	Name of Journal & Publisher	Times cited	Research Method	Key Findings (KF), Strength (S) and Weakness (W)
2	**Hu and Zhang (2021) [6]**	Covid-19 pandemic and firm performance: Cross-country evidence	International Review of Economics and Finance (Elsevier)	112	Regression Analysis (Fixed effect model)	**KF:** Firms performance (ROA) and severity of Covid-19 had a negative relationship. **S:** Examined a large global dataset of 16,148 firms across 107 countries using quarterly data. Considered sample country's' healthcare and financial system. **W**: Only cross-country comparisons were examined without considering supply and demand shocks. No endogeneity corrections.
3	**Rababah *et al.* (2020) [40]**	Analyzing the effects of Covid-19s pandemic on the financial performance of Chinese listed companies	Journal of Public Affairs (Wiley-Blackwell)	97	Regression Analysis (Pooled OLS)	**KF:** The negative impact of Covid-19 was more significant in small and medium sized Chinese firms. **S:** Studied multiple industries. Offered policy guidelines for firms, investors, financial institutions, and regulatory bodies to combine forces to tackle crisis. **W**: Examined pandemic shock for only one year (2020), which may not fully represent the long-term effects.
4	**Atayah *et al.* (2022) [17]**	Impact of Covid-19 on financial performance of logistics firms: evidence from G-20 countries	Journal of Global Operations and Strategic Sourcing (Emerald)	81	Regression Analysis (Pooled OLS)	**KF:** Covid-19 had a mixed impact across G-20 countries due to diverse crisis response strategies, government initiatives, supply chain constraints, and infrastructure. **S:** Provided comprehensive results and discussions by examining a large global dataset of 19,608 firms across G-20 countries.

S/N	Author & Year	Title of articles	Name of Journal & Publisher	Times cited	Research Method	Key Findings (KF), Strength (S) and Weakness (W)
						W: Only focused on logistics firms which is likely not applicable for government-linked and non-logistics firms.
5	**Szczygielski *et al.* (2022) [41]**	The impact and role of Covid-19 uncertainty: A global industry analysis	International Review of Financial Analysis (Elsevier)	61	Regression Analysis (ARCH/GARCH model)	**KF:** Covid-19 had a mixed effect across industries in different countries due to the nature of products and services (essential vs. non-essential), and demand unpredictability. **S:** Employed robust econometric and forecasting models on a large sample of 68 global industries. Analyzed data on daily basis. Considered the heterogeneity of the industries. **W**: Sample spans from January 2019 to May 2020 which may not fully represent the long-term effects of Covid-19. Excluded factors like stimulus packages, level of country restrictions, negative or positive news, could be linked to Covid-19 uncertainty. Lack of comparison between alternative measures of uncertainty.
6	**Golubeva (2021) [56]**	Firms' performance during the Covid-19 outbreak: International evidence from 13 countries	Corporate Governance (Emerald)	57	Regression Analysis on Survey Data (Pooled OLS)	**KF:** Both firm-specific and country-specific factors significantly impacted firms' performance during Covid-19 outbreak. **S:** Analyzed an equitable regional impact by assessing both firm-specific and macro-economic factors of 5,730 firms from 13 countries while emphasizing corporate governance infrastructure.

S/N	Author & Year	Title of articles	Name of Journal & Publisher	Times cited	Research Method	Key Findings (KF), Strength (S) and Weakness (W)
						W: Survey conducted in the third quarter of 2020, which may not capture the long-term impact of Covid-19.
7	**El-Chaarani *et al.* (2022) [60]**	The Impact of Corporate Governance on the Financial Performance of the Banking Sector in the MENA (Middle Eastern and North African) Region: An Immunity Test of Banks for Covid-19	Journal of Risk and Financial Management (MDPI)	55	Regression Analysis (Fixed effect and two stage least squares)	**KF:** During the pandemic period, banks' financial performance was strongly correlated with robust corporate governance practices, such as, having independent directors, substantial ownership concentration, potent legal safeguards, and little political pressure on board members. **S:** Thorough analysis at the cross-country level and practical recommendations for internal and external corporate governance for stakeholders. **W:** Examined pandemic shock for only one year (2020), which may not fully represent the long-term effects. Only considers market-based performance measure like Tobin's Q. Although considered variables such as board size, independent directors, CEO duality, ownership concentration, political pressure; other corporate governance factors such as structure of audit committee, number of board meeting etc. are missing.
8	**Weaver (2023) [61]**	The Impact of Covid-19 on the Social Enterprise Sector	Journal of Social Entrepreneurship (Taylor & Francis)	52	Conceptual Research	**KF:** The paper confirmed financial challenges faced by social enterprise firms during Covid-19, such as lack of funding and operational inefficiency.

S/N	Author & Year	Title of articles	Name of Journal & Publisher	Times cited	Research Method	Key Findings (KF), Strength (S) and Weakness (W)
						S: Focus on less explored social enterprises and how they might successfully navigate the crisis period while attaining their financial goals. **W:** No quantitative analysis. Sub-sector analysis and geographical variables are missing.
9	**Cui *et al.* (2021)**	Accounting conservatism and firm performance during the Covid-19 pandemic	Accounting and Finance (Wiley-Blackwell)	42	Regression Analysis (Cross-sectional regression)	**KF:** Firms that practiced more conditionally conservative reporting had smaller drops in their stock price during Covid-19 pandemic in China. **S:** Four robust models measure accounting conservatism. Also highlighted the importance of conservatism in reducing information asymmetry during crisis time. **W:** Single country representation and exclusion of macro-economic factors.
10	**Liu *et al.* (2021) [43]**	The impact of operating flexibility on firms' performance during the Covid-19 outbreak: Evidence from China	Finance Research Letters (Elsevier)	40	Event study and Regression Analysis (Pooled OLS)	**KF:** Positive correlation evident between firms' stock price and their operational flexibility. **S:** Pointed out the significance of operational flexibility in managing crisis time risk through robust event study and multiple empirical models. **W:** Examined pandemic shock of the first two quarters of 2020, which may not fully represent the long-term effects.
11	**H. H. Nguyen *et al.* (2021) [62]**	Financial performances, entrepreneurial factors and coping	Research in International Business and Finance (Elsevier)	37	Survey and Regression (Stratified random sampling	**KF:** Covid-19 had a negative impact on the performance of Vietnamese firms because of inadequate crisis strategies.

S/N	Author & Year	Title of articles	Name of Journal & Publisher	Times cited	Research Method	Key Findings (KF), Strength (S) and Weakness (W)
		strategy to survive in the Covid-19 pandemic: Case of Vietnam			and logistic regression)	**S:** Utilized survey approach to investigate variables such as risk perception, financial distress, decision-making, and entrepreneurial aspects to examine business performance during a crisis. Use both quantitative and qualitative research. **W:** Single country representation and absence of industry-specific analysis.
12.	**Lu *et al.* (2022) [63]**	Are firms with better sustainability performance more resilient during crises?	Business Strategy and the Environment (Wiley-Blackwell)	30	Regression Analysis (Three stage least squares)	**KF:** Compared to the 2008 global financial crisis, companies with better sustainability had greater resilience during the Covid-19. **S:** Compared between global financial crisis and Covid-19 crisis and assessed how different crises impacted the relationship between sustainability and financial performance. **W:** Only G-7 countries were focused which may not be generalized for emerging economies.

5. Research Implications and Avenues for Future Research

Together, our sample papers evaluate how Covid-19 has affected corporate financial performance and offer recommendations that may help firms become more resilient for future systemic risk. The important takeaways are briefly discussed below:

5.1. Research Implications for Management

The majority of our sample papers concentrate on firm-level analysis and highlight strategies for overcoming pandemic-related challenges at the managerial level. To achieve organizational resilience and greater firm performance during pandemic time, Baral *et al.* (2022) [42] suggest that managers should implement practices like operational capability, collaboration with stakeholders, risk management culture, and digitalization. Furthermore, companies with significant operational flexibility outperform those with limited ones in terms of stock performance (Liu *et al.*, 2021) [43]. In addition, working capital and profitability are positively correlated both during and after a crisis in

developing countries, and managers should implement appropriate working capital policies (Ahmad *et al.*, 2022 [44]; Pant *et al.*, 2023 [45]). Moreover, maintaining liquidity levels, controlling debt, and restoring solvency can help managers navigate the obstacles that accompany the pandemic (Abbas & Nainggolan, 2023 [1]; Defung *et al.*, 2024 [11]). Also, firm managers should identify the optimal level of investment in R&D and CSR to increase the firm's value during a pandemic (Toumi *et al.*, 2023 [14]; Yadav & Srivastava, 2023 [46]). In light of this, managers should prioritize firm-level strategies such as developing networking capabilities and developing routines and processes that are appropriate for the external environment, as well as paying attention to changes in the external environment and shifting corporate strategy accordingly (Shen *et al.*, 2020 [2]; Wegner *et al.*, 2023 [47]).

5.2. Research Implications for Board of Directors and CEOs

Prioritizing board structure and CEOs' skills to combat pandemics is shown by a number of our sampled papers. Interestingly, firm performance of family-owned firms was notably higher than that of non-family firms through the pandemic (Miroshnychenko *et al.*, 2024 [48]). Additionally, firm value correlates strongly with board independence, diversity, frequency of board meetings, and board financial expertise, as well as institutional ownership (Perwitasari *et al.*, 2022 [49]; Tarighi *et al.*, 2023 [18]). As a result, the structure of the board of directors should be designed to give them greater flexibility and monitoring legitimacy, allowing firms to prioritize good corporate governance practices for crisis management (Sivaprasad & Mathew, 2021) [50]. In addition, insider CEO-led firms ensured a higher return on assets and outperformed during crisis periods than outsider CEO-led companies (Haque *et al.*, 2022) [51]. Furthermore, CEO duality has a detrimental impact on businesses, and Covid-19 made its catastrophic impact severe (Tarighi *et al.*, 2023) [18]. Lastly, firms with better leadership teams show reduced stock return volatility, improved operating performance, and lower default risk (Kumar & Zbib, 2022 [21]; Nguyen *et al.*, 2023 [52]).

5.3. Research Implications for Investors

Enhanced by the media coverage of the Covid-19, negative sentiment had led to investor fear and stock market turbulences (Al-Awadhi *et al.*, 2020) [53]. Amidst the unprecedented crisis, investors reconsider their investment choices and exhibit increased risk aversion (Ichev & Marinč, 2018 [54]; Zhang *et al.*, 2022 [55]). Studies showed that profitable industries such as biotechnology, software, internet and direct marketing retailing, health care technology, and software had yielded positive returns that even surpass those prior to the Covid-19 period, while industries like airlines, tourism, and oil were negatively impacted (Szczygielski *et al.*, 2022) [41]. Consequently, investors may even earn a favorable return on their portfolio by selecting industrial sectors that are more resilient during pandemics and diversifying their portfolio with regard to such industries. Moreover, investors noticed that companies with a more geographically diverse portfolio were better equipped to withstand the Covid-19 pandemic (Chu *et al.*, 2021) [13]. In general, investors need to understand how returns fluctuate during pandemics and manage the risks attached to their financial assets (Shen *et al.*, 2020) [2].

5.4. Research Implications for Regulatory Bodies and Policymakers

The sample papers also pointed out several key takeaways for regulatory bodies and policymakers. Firstly, fiscal support packages proved to be more successful than other policies during

the Covid-19 (Igan *et al.*, 2023) [5]. However, before providing government support, policymakers must recognize the vulnerability of specific firms, industry sectors, and nations. They must adopt a sector- and region-specific approach, as a general approach of "one size fit all" may not be effective (Golubeva, 2021 [56]; Gajewski & Kutan, 2023 [4]; Toumi *et al.*, 2023 [14]). Secondly, during a pandemic, exceptional policy measures such as tax deferrals and delaying legal action against insolvent debtors can be implemented. The central bank may strongly encourage commercial banks to provide favorable loan packages alongside lenient lending conditions for any company that has a high probability of survival (Ngo & Duong, 2023) [57]. The Chinese government undertook many financial policies, such as providing short-term financial help to impacted firms in order to stabilize the market, which substantially minimized the financial difficulties of such firms (Ren *et al.*, 2021 [7]; Wang *et al.*, 2023 [58]). Thirdly, authorities should support the adaptability of large firms while stressing the importance of maintaining liquidity to prevail over hurdles (Defung *et al.*, 2024 [11]). Particularly, maintaining steady supply chains should be of paramount importance because when a supply chain becomes discounted, there is a greater mismatch between producers and consumers, and a shortage of supplies may cause unanticipated inflation (Zhang & Zheng, 2022) [59]. Prioritizing policies that assure the seamless movement of goods, such as safety protocols at warehouses to protect staff's health, alternative modes of transport, and adapting service offerings for emergencies can help reduce supply chain bottlenecks and pace up clearance (Atayah *et al.*, 2022) [17].

5.5. Avenues for Future Research

Although the current literature has extensively investigated the Covid-19 and firm performance relationship, our research has identified some important research gaps. Firstly, papers published in the earlier stages of the pandemic could not incorporate factors like the government stimulus package, business sensitivity to multiple phases of Covid-19 and the country's preparedness. Future research may be conducted on both short-term and long-term basis to capture the effects of the everchanging scenario of Covid-19. Secondly, Covid-19 research can be prone to endogeneity issues such as omitted variable bias, selection bias, and reverse causality, which may bias the findings. Future researchers may address this issue by using models like 2SLS, 3SLS, Heckman Selection model, System GMM and DID. Thirdly, due to limited availability of data, relatively few research papers investigated micro, small, and private enterprises, and startups; rather, the majority of studies examined public limited corporations. Therefore, future research might offer in-depth analyses through the examination of these firms' websites, newsletters, and annual general meetings, which could assist in taking measures to overcome the crisis period. Finally, the sole use of quantitative research methods employed by most papers may provide a snapshot of pre-during-post-Covid-19 firm performance, but to get a comprehensive picture of how things happened the way they did, more qualitative research might be added. In other words, future studies may aim to gain a better understanding through longitudinal studies, surveys, meta-analysis, in-depth interviews, observations, and case studies. These will help investors, policymakers, and firms make informed decisions and adjust their strategies in response to crisis.

6. Conclusion

Firms encountered several financial and operational challenges during the Covid-19 outbreak owing to prevention policy implications such as lockdown, large-scale quarantines, travel restrictions,

and workplace closure (Gajewski & Kutan, 2023) [4]. Unlike other exogenous shocks, Covid-19 had a deep-rooted impact on both the demand and supply sides and the post pandemic recession is a product of a decline in demand for products and services, disrupted supply chain, loss of jobs, and reduced income (Shen *et al.*, 2020) [2]. From 2020 onwards, research on the impacts of Covid-19 on the macro and microeconomic levels has grown in attention. In addition, present knowledge of how Covid-19 affects firms' financial performance is still fragmented and inconsistent across a number of research domains, such as industry performances, geographic locations, and other indirect factors: working capital, accounting actions, and management roles. Currently, the full extent of the Covid-19 pandemic's economic shock is still being determined, and the massive expansion of Covid-19 literature creates a need for a systematic literature review to articulate existing findings, comprehend the big picture, pinpoint useful implications, and provide promising directions for future exploration along this line of research.

Following the PRISMA framework, we conducted a systematic literature review of 60 relevant journal articles published between 2020-2024 that were ranked in the ABDC (A*, A, B, and C) and SCOPUS index (Q1, Q2, Q3, and Q4, with Q1 representing the top 25% of journals based on impact factor or CiteScore). Further, we also evaluated the ABS rankings of the sample papers' published journals. Results show that most of the research was published in B ranked (as per ABDC ranking), Q1 ranked (as per SCOPUS ranking) and ABS-2 and 1 ranked (as per ABS ranking). Moreover, current studies linked theories to the potential impact of Covid-19 and firm performance, such as agency theory, entrenchment theory, and stewardship theory. Elsevier, Emerald, and MDPI are the top three leading publishers. The most cited article is *"The impact of the Covid-19 pandemic on firm performance"* by Shen *et al.* (2020) [2]. As per bibliometric mapping, the most contributing region in the research output is Asia, particularly China. Our results reveal that the majority of the papers used quantitative methods such as Pooled OLS, Fixed effect and other types of regression analysis. Around half of the sampled papers used accounting-based measures as dependent variables and the remaining papers used market-based measures or mixed variables as dependent variables. CSMAR, BvD, Compustat, Datastream, and Prowess were most widely used as sources of data. Despite the large number of papers (46.67%) reporting the negative impact of Covid-19 on firm performance, 16.67% of the sampled papers reported mixed results in various regions and countries, which are attributed to several firm-specific, macro-economic, and industry-specific factors that change the firms' resilience to handle crisis like pandemics. This reveals the need for understanding why the heterogeneity of the findings occurred with further research.

In practical terms, our research also highlights different implications that could minimize crisis impact. Firstly, firms should focus on operating flexibility, collaboration, digitalization, controlling debt, optimizing working capital policies, and adapting corporate strategy to external changes. Secondly, efficient board structure, strong corporate governance in crisis management, and competent CEO skills can mitigate company-specific risks during pandemics. Thirdly, investors can reduce crisis period investment risks and ensure positive returns by identifying and selecting resilient industries and diversifying portfolios accordingly. Finally, policymakers and regulatory bodies should emphasis on implementing exceptional crisis period policy measures such as tax deferrals, postponing legal action against insolvent debtors, providing fiscal support packages, supporting the adaptability of specific firms, and prioritizing policies to stabilize supply chains.

Although current literature extensively explores the impact of Covid-19 and firm performance, our research has discovered several significant research gaps that may serve as directions for future studies. Future researchers may incorporate factors like the government stimulus package, business sensitivity to multiple phases of Covid-19 and the country's preparedness to conduct studies with both short-term and long-term datasets. Subsequent investigations ought to concentrate on the effects of Covid-19 on startups and micro and small enterprises, utilizing qualitative methods such as in-depth interviews, observations, case studies etc. Future research should be cautious about potential endogeneity concerns.

While the results and findings of our research may have many contributions, they also have some limitations as well. First, we only consider scientific journals such as ABDC ranked and Scopus index to identify 60 sample papers; hence our approach can provide some level of bias, we suggest that other global indexes, such UTD24 and ABS classifications, be taken into account in the future systematic literature reviews. Second, we only consider the Dimensions database and use specific keywords to retrieve results that have a combination of these keywords in the abstract and title of the journal papers. Robustness checking with subscription-based global databases like Web of Science and SCOPUS could provide a more comprehensive list. As a result, there may be some literature outside of this research that uses alternate databases and new keywords. Since we limited the study to existing literatures by early 2024, there is a possibility of overlooking the emerging evidence. More gaps may appear as the topics expand and as papers appear in different journals.

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