

## Comparative Analysis of the Financial Performance of Jordanian-listed Companies during and after the covid-19 Pandemic

ABDALWALI LUTFI<sup>1,2,3,4,\*</sup>, NASHAT ALI ALMASRIA<sup>5\*</sup>, HASSAN H ALDBOUSH<sup>6</sup>,  
MOHAMMED FAISAL HASSAN<sup>2</sup>, MAHMAOD ALRAWAD<sup>7,8</sup>,

FADYA BURHAN ALHAJAHMAD<sup>9</sup>,  
<sup>1</sup>College of Business Administration,  
The University of Kalba,  
Kalba,  
UNITED ARAB EMIRATES

<sup>2</sup>Business Administration Department,  
King Faisal University,  
KINGDOM OF SAUDI ARABIA

<sup>3</sup>MEU Research Unit,  
Middle East University,  
JORDAN

<sup>4</sup>Applied Science Research Center,  
Applied Science Private University,  
JORDAN

<sup>5</sup>College of Business Administration,  
A'Sharqiyah University,  
OMAN

<sup>6</sup>Faculty of Business,  
Philadelphia University,  
JORDAN

<sup>7</sup>Quantitative Method Department,  
King Faisal University,  
KINGDOM OF SAUDI ARABIA

<sup>8</sup>College of Business Administration and Economics,  
Al-Hussein Bin Talal University,  
JORDAN

<sup>9</sup>College of Business Administration,  
The World Islamic Science and Education University,  
JORDAN

*\*Corresponding Author*

*Abstract:* - One of the main financial management issues in the world is determining factors that influence the return of the stock exchange, which has been the subject of numerous studies recently. Although this topic is one of the most explored in accounting and finance in recent years, there is still a scarcity of investigations on the developing markets- especially making a comparison during and after the pandemic. Therefore, the key objective of the current study is to shed light on the effects of the COVID-19 epidemic on the returns of the stock markets of the Jordan Stock Exchange sectors. Specifically, it examines the effect of COVID-19 on the

banking, industry, insurance, and services sectors in the Jordanian stock markets for the period from 2020 until 2022, daily, at a rate of (512) trading days for the Jordanian Stock Exchange. The analysis was conducted using regression analysis. The results supported the number of new daily cases of COVID-19 in Jordan had a positive impact on the returns of the most affected industry sector, then the banking sector, followed by the services sector. However, it hurts the insurance sector. The return of the stock exchange appears to be more sensible to newfound cases of infection with the Coronavirus. In contrast, the new deaths from the Coronavirus do not influence the sectors of the Jordanian Stock Exchange. This study results revealed that the Jordan Stock Exchange sectors are facing challenges in terms of the restrictions on economic activities, which ultimately influence the stock return. This study's results contribute to various concerned parties, investors, authorities, researchers, and financial analysts alike in thoughtful consideration of the existing practices of the returns of the stock exchange, assisting them in reviewing and reconsidering the applied accounting standards and enlightening the financial report credibility in the Jordanian market. The present study suggests that firms uphold financial aspects and metrics and oversee them during any pandemic or any similar events, and stock market decision-makers need to develop strategies for minimizing the disparities in financial performance during and post-pandemic periods. Added to these, the study provides information that policymakers, investors, and the whole society may find useful concerning the adverse effects of natural disasters on the economies to lay down best practices in risk management strategies and crisis adaptability.

*Key-Words:* - COVID pandemic; Stock Markets; Returns of the Stock Market; Return on Asset; Return on Investment; Growth; Industry Effect; Sector Index.

Received: September 25, 2023. Revised: April 25, 2024. Accepted: May 23, 2024. Published: June 18, 2024.

## 1 Introduction and Background

The global effects of the Covid-19 pandemic have turned into a monumental challenge for both healthcare and economies as it permeates the entire financial sectors, [1], [2], [3], [4], [5], [6]. In the context of the stock market, major incidents are cause for instant response, [7], [8] and this has been exemplified during the pandemic crisis leading to the decline in economic activities after which the value of enterprises plummeted, [9], [10], [11], [12]. It is undeniable that the Covid-19 pandemic has led to a long-term crisis involving every country around the globe, permeating every social, economic, health and financial sector, [13], [14], [15], [16]. In the financial sector, the regulatory and supervisory entities have emphasized the long-term damage wrought by the pandemic, with the majority of the countries' stock markets experiencing sharp declines since its outbreak, and this holds for Jordan, [17], [18], [19], [20]. Stock returns have been disturbed by the pandemic in different ways based on industry, [21], [22]. Since the past recession that spanned from 1929 to 1931, the 2008 financial crisis has been the top serious international economic crisis by far, but the negative effects of the epidemic have clarified the vulnerability of economic openness in both developed and emerging nations, [23], [24], [25], [26], [27].

The resulting shift in the socio-economic landscape involving factors like inflation and

pandemics have led to the downfall and plummeting of stock market business, as a result of which increasing performance gap has arose, [26], [27], [28], [29]. In particular, the economic development of Jordan pro and post-pandemic was and continues to be affected, [30], [31]. Brought on by incessant lockdowns and systematic curfew, major business sectors have ended up being closed and customers demand for products and services decreased brought on by the limitations in movements and the halt in business operations, [17], [32].

In this background, stock prices are major indicators of a successful business and return on investment and the capital market is vulnerable to unexpected conditions that disturb the perceptions of the investors and affect the stock prices, [33], [34], [35]. This is indicative of the fact that stock price movement stems from variables that are based on the market and firm conditions. According to financial and behavioral finance theories on the capital markets, stock price movement is a consequence of markets and firm-based factors, [36], [37], [38]. Any economic or environmental occurrence influences investor perception, impacting stock prices. According to [39], investor positiveness decreases return volatility, but glumness raises profits volatility. Also, there remains a gap in the literature dedicated to assessing the Covid-19 effects on the stock market at the

corporate and industry level, which the pandemic has wrought significant damage [2], [40], [41].

In December 2019, cases of a viral illness were reported in China. In January 2020, as the number of confirmed cases increased, the World Health Organization (WHO) declared the virus outbreak a "Public Health Emergency of International Concern." On February 11, the illness caused by the coronavirus was officially named COVID-19, [42], [43]. On March 11, 2020, the global spread of the coronavirus was declared by the WHO, [44], making the COVID-19 virus a global health challenge affecting more than 170 countries worldwide. With many countries implementing strict quarantine measures, economic activities were significantly impacted. Risks associated with this pandemic emerged from border closures, halted air travel, mass unemployment, and disruptions in supply chains, affecting numerous businesses, companies, and industries, [45], [46]. COVID-19, which began in December 2019, has infected over 10,000,000 (ten million) individuals and caused more than 590,000 cases of deaths globally. Early estimates placed the global economic cost of the pandemic at around over 8.9 trillion dollars.

In the twenty-first century, numerous diseases and epidemics, including bird flu (H1N1) and MERS, until the Coronavirus emerged in 2020, causing a global pandemic with numerous economic and financial implications. According to [47], illnesses can harm people of all social and economic classes in any civilization if they proliferate in developing nations due to congestion, inadequate public health, and encounters with wild animals. Therefore, more investments in public health and growths required in wealthy and impoverished countries, given politicians' contempt for scientific truths about the importance of public health in enhancing the quality of life and as a driver of economic progress.

The last year was extraordinary in terms of the COVID-19 impact on all aspects of life, either economic or health issues, [48]. Thus, the pandemic has socio-economic effects circulating dramatically. The COVID-19 outbreak has already resulted in enormous human suffering and economic distress. Supply chains worldwide and travel and commodity markets are all impacted. In other economies, the consequences of successive outbreaks are similar, [49].

The impacts of the pandemic are increasingly evident as the number of cases continues to climb. With governments implementing stricter health protection measures, the rising number of cases leads to extended periods of disruption for

numerous social and economic activities. The impact of the epidemic can be gauged by the growing number of confirmed cases, surpassing 120 million as of March 17, 2021, according to the WHO, [50]. The declaration of the Covid-19 as a pandemic along with the related government regulations measures and induced packages in the form of financial assistance and cutbacks of interest rates, have the likelihood to direct stock markets in various sectors in a confusing trend for months, [51], [52]. Scholars from all over the globe have documented the dynamic developments, as a result of which, studies on the effects of Covid-19 epidemic on the global financial markets have been published currently.

As a consequence of COVID-19 and related effects, businesses have had to close with thousands of employees laid off, resulting in heightened unemployment rates and unstable financial status for all, [23]. This urged the governments to implement different assistance measures in the form of stimulus packages and assistance initiatives to minimize the negative effects, [53], [54], [55]. Additionally, due to the pandemic, several economic and social inequalities came to light, beginning with the challenges that marginalized communities face in obtaining education, healthcare, and required services for daily lives. Along with these are the psychological and emotional stress on the individuals that manifested in the form of anxiety, stress, and feelings of isolation. Regardless of the above issues, communities remain resilient, adaptable, and supportive of one another promoting a united front in the face of challenges, [56].

This study deals with the effects of the pandemic in different economic sectors such as health, banking, education, retail, IT, real estate, and the hospitality industry, [57], indicating that the effects of the COVID-19 pandemic has been experienced across the board. Owing to such effects, the financial markets also suffer in the form of declined economic activity, [58] and the value of businesses, [59], [60]. The pandemic's impact on the economy has also been documented in the indirect impact on the stock market. While the impact varied by industry, the pandemic influenced stock prices and market volatility, [61], [62], [63]. As a result, this study looks at the financial ramifications of the Coronavirus spreading across Jordan's stock exchange sectors.

It, on the other hand, provided the opportunity for the advancement of high-tech areas. The outbreak positively impacted the information technology, education, and healthcare industries. The following are some of how our research adds to

the literature. First, the epidemic's impact on stock prices in various subsectors is investigated, as well as the response of each industry to the epidemic. Second, our work is the first to use the event study technique to investigate COVID-19 impacts at the industrial level. As a result, this research contributes by enriching the body of knowledge on COVID-19 and its effects on several parts of the economic and financial system. This research contributes from the standpoint of stock market response. The epidemic's impact may then be assessed based on the total number of proven cases, which was at more than 119 million as of March 17, 2021. A vaccination or prospective cure is a long-term effort that might take years to complete. As a result, the influence will last a long time. The current coronavirus disease endemic has caused dramatic shifts in the macro environment and market behavior, forcing most businesses to reconfigure their business models to adapt to the changes quickly.

The coronavirus disease outbreak and its economic effects increased the need for full-quality financial information among investors and other decision-makers more than ever. Regulatory bodies provide direct guidance and support on the needs for planning financial and accounting findings that must be taken into account for the influence of the (COVID-19) flu epidemic. Government agencies and researchers gather crucial evidence-based data through extensive statistical surveys for establishing policies. However, there is insufficient analysis to understand the structure of the stock market industry and the management status of businesses in these sectors. Furthermore, there are limitations in comparing the financial performance of Jordanian-listed companies during and after covid-19 pandemic, [64], [65]. Government agencies and research organizations gather crucial evidence-based data through extensive statistical surveys for establishing policies. However, there is insufficient analysis to understand the structure of the ocean and fisheries industry and the management status of businesses in this sector. Furthermore, there are limitations in selecting policy subjects and implementing policies based on statistical data. Top of Form.

## **2 Jordanian Financial Sector Reaction to COVID-19 and Long-Term Effects**

After the trading closure on the Amman Stock Exchange in 2020, as a response to the Covid-19 pandemic, the government of Jordan had to impose

economic and physical restrictions on businesses, [6], [17], [66], [67]. On a global scale, the direct and destructive economic impact of Covid-19 is evident, and this holds true for Jordan, which regardless of having a robust stock exchange sector has been negatively affected by the pandemic because of lack of natural resources and large dependence on imports, [17], [68]. Consequently, firms have been forced to address the crisis effects in order to sustain their activities. Based on the Jordanian Strategy Forum, while the pandemic impacted every business regardless of their sizes, small businesses that employed ten or fewer employees (67%), bore most of the brunt, with over half of the investors in the Jordanian enterprises requiring a year or several years of recovery, [69]. This was supported by the findings of a 2021 report made by the International Labor Organization, the United Nations Development Program, and the Favo Institute for and Social Studies, which revealed that small-micro enterprises have bore the brunt of the pandemic, with around 55% micro-companies and 44% small companies having to halt paying their employees, while 33% of medium firms and 23% of large-sized ones continuing to do so, [69]. As for their financial resources, the surveyed enterprises indicated that 21% of them used commercial loans as their main financial source, 3.4% made use of equity financing, while 0.4% made use of non-bank financial institution products. The report's highlight on the financial responsibilities for small and medium-sized business indicated that the former category (44%) fell short of meeting outstanding bills compared to the latter category (34%). On a positive note, 57% of businesses turned to using online activity to the maximum, while 33% established remote work trends for their workers, [70]. During the pandemic time, the government of Jordan established procedures and actions to be taken by banks in light of the directions set out by the World Bank that majority of nations adhered to – this was the same for the central bank that reported major measures and actions for public firms to basically contribute to recouping losses and to adapting to the pandemic influence in all economic areas. However, despite all the developments and explanations, the effect of the epidemic remains clear in every economic and business area, with some still suffering worse than others, [17].

The unique coronavirus outbreak and its consequences have caused significant concern. Concerns about COVID-19's quick and recursive economic and financial effects of this unexpected health crisis, have prompted a steadily growing

number of studies on COVID-19's impact on stock industries in many of the affected areas in the US, Europe, Asia, and Africa. This study intends to contribute to the increasing literature by concentrating on stock markets in GCC countries. The number of those who have been confirmed killed is rising, [71]. These statistics are projected to soar when indirect expenditures such as lost comorbidities and productivity are included. As a result, the economic ramifications impact not just public health systems but also economics and business, as well as various market types and retail chains, [49].

The pandemic declared in March 2020 by the WHO has had far-reaching effects on global society [44]. Different sectors have reverberated with the effects of Covid-19 including healthcare, social life, economy, and governments, [72]. Limitations in gatherings as a result of the need to physically distance themselves from each other have led to the transformation of social interactions and strained healthcare services, overwhelmed by the pressure and the limited resources. In other words, the global economy has experienced shocks leading to the closures of businesses and the losses of numerous job positions. Governments have been laid transparent leaving their decision-making and policies under scrutiny. The pandemic has also exacerbated existing inequalities, affecting marginalized communities disproportionately. Efforts to mitigate the impact continue, showcasing resilience in the face of adversity.

The virus, which rapidly spread across the globe, was officially recognized as a pandemic by the World Health Organization in March 20r.20. This designation marked a significant turning point in the global response to the virus, indicating the urgency and severity of the situation. The effects of the pandemic can be observed in virtually all sectors of human existence. Social life has been greatly impacted, with restrictions on gatherings, physical distancing measures, and changes in interpersonal interactions becoming the new norm.

Furthermore, the pandemic reshaped the way people work, learn, and socialize to a tremendous extent. The necessity to adapt to the remote model of work and the transition to virtual meetings characterized modern reality. The pandemic caused the reconfiguration of traditional patterns of work, contributing to an accelerated pace of digitization in numerous fields. In the educational sector, most institutions switched to online learning, which posed multiple challenges and opportunities to students and educators.

The first preventive government measures were initiated on February 23, with Jordan's authorities tightening control and preventive measures at all border crossings. The first confirmed case of COVID-19 in Jordan was reported on March 2, 2020. By 17th March, the number of verified cases reached forty, [73]. This led the government in Jordan to take further precautionary measures, together with the activation of the Defense Law issued in 1992, suspending all public and private institutions and administrations except vital sectors and the health sector. It also restricted citizens from leaving their homes excluding the cases of extreme necessity. Gatherings of more than 10 people were prohibited, as was inter-governmental travel.

Literature on the influence of COVID-19 (coronavirus) on stock market movements during the pandemic may appear random or irrational, but upon closer examination, it becomes clear that financial markets did not react blindly, [74]. The following Table 1 illustrates the changes that occurred in the Amman Stock Exchange (ASE) during the year 2020, [75].

Table 1. Changes that occurred in the Amman Stock Exchange (ASE) during the year 2020

	2020	2019	2020
Trading Volume		1.6 billion Jordanian Dinars	1 billion Jordanian Dinars
Traded Stocks		1.2 billion shares	1.1 billion shares
Executed Contracts		503 thousand contracts	421 thousand contracts
ASE100 General Price Index		1815.2 points	1657.2 points
Market Capitalization of Listed Stocks		14.55 billion Jordanian Dinars	12.9 billion Jordanian Dinars
Foreign Investments		164.4 million Jordanian Dinars	96.9 million Jordanian Dinars

In emerging stock markets, a study by [62], reveals that the responses of these markets were robust during the primary emergence of the pandemic, while a study by [76] indicates significant short and medium-term impacts of market volatility resulting from the pandemic. The present work aims to empirically examine the influence of the coronavirus (COVID-19) on the emerging stock market.

### 3 Related Literature

This part aims to present some of the previous research that has been done on the subject. It starts

with works on the global financial crisis, including an illustration of the stock market's reaction. It also includes some latest publications on the economic and industry implications of the pandemic, [76], [77], [78]. The global financial crisis has been examined from several angles. The "global financial crisis," according to [79], is linked to the efficient market hypothesis. Despite the theory's undeniable flaws, the notion that it is to blame for the current global crisis appears to be overblown, [80]. Whether market efficiency is to blame for an asset bubble, investing professionals are miscalculating risks, and regulators worldwide fall asleep at the wheel. Other allegations include the failure of Lehman Brothers and other significant financial companies demonstrating market inefficiencies and that a well-functioning market would have forecast the catastrophe. He refutes these arguments and explores the evidence of pervasive abnormalities and the emergence of behavioral finance, [81], [82]. In the pandemic period, the economies all over the world have experienced their worst performance, [83], [84], as evidenced by the increasing number of studies in the past few years. Regardless of the bulk of literature dedicated to the topic, only a few studies have focused on the effect of the pandemic on developing countries, which are still struggling to stay on their feet following the pandemic. On the whole, the current pandemic has had the worst effects on economies compared to previous pandemics and not even the financial crisis of 2008-2009 can compare. In a short period, it had resulted in higher uncertainty due to which the assessment of its impact on the economy and the recession challenge remains ongoing, [49]. The resulting recession was brought on by the challenges and restrictions due to the pandemic on social lives and presently, only a few methods have been proposed to evaluate the influence of the corona pandemic on the growth of the economy, industry and businesses, [85].

Owing to the current dynamic changes in the financial markets on a global scale, studies have largely analyzed the Covid-19 long-term effects, specifically on the risks in the countries and on their investment returns; countries like the U.S., China, and the U.K. were the subject of such analysis, where studies adopted scientific observations, [27], [46], [85], [86], [87]. In particular, in the U.S. context, [87] looked into the way COVID-19 impacted stock returns through the effects on previous asset prices. The findings of this study and related findings supported an enormous and long-term negative effect of the pandemic on the world economy owing to it being a health catastrophe,

[88]. Nevertheless, based on industry-level, studies found the minimal effects of the pandemic on stock prices, with its economic level being limited to some industries more than others, [77]. Other related studies like [27], looked into the Covid-19 pandemic effect on financial securities and conducted a comparison between those of China and other countries, but largely stayed away from the diversity of the sectors. Also, in [89], the authors examined the epidemic's effects on financial markets.

Because COVID-19 has had a severe impact on economies throughout the world, but possibly most notably in emerging economies. In addition, COVID-19 has forced governments throughout the world to choose between saving lives and strengthening the healthcare system's ability to deal with the epidemic, or funding initiatives to reduce the costs of social isolation and company closures. However, it is crucial to note that implementing such policies in a developing economy is substantially more difficult, [90]. In addition, these countries face various obstacles that make it difficult to take the essential steps. Noticing the potential economic impacts of epidemics when COVID-19 occurred, several recent academic studies attempted to investigate the impact of this disease outbreak on stock market performance in various countries using various econometric methods. [91], use a panel regression technique using different configurations: the daily increase in total reported cases and the daily increase in fatalities. According to the research, these indicators significantly negatively affect stock returns throughout the Hang Seng Index. After accounting for country characteristics and systemic risk owing to global variables, [51], conducts a panel data analysis to investigate the impact of an increase in COVID-19 confirmed cases and fatalities on stock market returns. [51], considered the influence of the COVID-19 pandemic on the stock market performance of 64 nations. According to [54], COVID-19 significantly influenced the financial industry (including banks and financial institutions). However, little study has been done on the economies showing indications of recovery.

Not all flows were in the opposing direction of the economic cycle during the global financial crisis of 2008-2010. The World Bank, notably the African Development Bank, and development banks, particularly those that assist public-sector initiatives, were anti-cyclical. European development finance institutions (EDFIs), however, were insufficient. The European Union's and the Organization for Economic Cooperation and Development's overall

support in 2009 and 2010 did not run as opposed to the economic cycle, [92].

The World Bank Group and the International Monetary Funds are collaborating to solve the present coronavirus crisis by tackling the outbreak and its health consequences and supporting financially damaged countries, [77]. A two-year pause is recommended to establish immediate fiscal space to deal with healthcare emergencies. They are returning to the state of the continent before COVID-19 in order to ensure a strong recovery, [93]. [47], offered some initial cost approximations for COVID-19 according to seven scenarios for how the disease could evolve. Rather than being particular about the virus pandemic, the goal is to offer data on a variety of probable financial implications associated with it. [94], investigated how the COVID -19 spread influenced financial markets. The researcher tested the program in the six worst countries (based on the number of cumulative incidents). As a result, it has been determined that Stock Market returns (SMR) are more sensitive to COVID -19 cases than deaths. Furthermore, the COVID -19 spread has a negative impact on SMR in China, Germany, France, and Spain, according to the durability check.

The financial market's reaction to this pandemic concerning Coronavirus transmission will be investigated by [51]. This study used daily COVID-19 confirmed cases, deaths, and SMR data from 64 countries. The study indicates that the stock market has reacted negatively to the increase in COVID-19 confirmed cases. The findings reveal that an increase in the number of confirmed diseases causes stock markets to react faster than an increase in deaths. According to the findings, adverse market reactions were also significant during the early days of verified cases and between 40-60 days after the initial confirmed cases.

Indubitably, the COVID-19 pandemic has wrought destruction and harm to the majority of listed firms and stock markets, leaving the latter to enter a bear market, [95]. Added to this, the global market capitalization has been evidenced to have shrunk by 30%, with notable tremendous volatility and uncertainty in the global financial markets throughout March 2020. In the U.S., the stock market plummeted to its lowest level since 1987 because of the pandemic, and in India and China, low economies ensued following the great shock major economies showed reduced rates of interest in their central banks to attract investors but did not succeed in their quest, [96]. Hospitality firms were impacted resulting in the selling off of stocks and significant dips in indices were documented. In this

regard, the World Bank took a step to assist countries by pledging \$14 billion for assistance, [85], providing financial assistance to member countries for the enhancement of health services and better infrastructure, along with investments in timely discovering details about the virus, [70].

[97], looks at the effect of COVID-19 instances and deaths on the stock markets in the US, taking into account variations in the trading amount and volatility expectations. Based on the GARCH 1 model, the findings imply that the COVID-19 issue has substantially influenced the number of cases and deaths in the United States and six other nations.

Along the same study, [61], dedicated their work to the COVID-19 pandemic effect on Egypt's Exchange Sectoral Indices. The spread of the virus was documented using Coronavirus cases and deaths, with the population of the country gauged by each case and new death. The study's dependent variable gauged the returns of daily sectoral indicators for the stock market, and it indicates the indicators' response to the Coronavirus spread. Beginning from March 1, 2020, to May 10, 2020, this was daily noted and the findings showed that SMR tended to be sensitive to cumulative mortality indicators compared to daily Coronavirus deaths. In this regard, the pandemic increases the risk of losses, after which the management is urged to support financial reserves for emergencies, also, increasing cash retention was found to lead to the depletion of investment funds, which decreases the long-term growth of the firm.

[98], use panel data analysis to explore the influence of the coronavirus outbreak on stock markets; the results show that the banking sector, the food, beverage, and tobacco sector sectors, and the healthcare and pharmaceutical sectors all have significant negative industrial impacts.

Furthermore, the results show that different segments, such as the IT sectors, the Communications and Media Services sectors, the Transportation and Shipping Services sector, and trade, all significantly positively impact the industry.

In [99] study, the stock market's performance was the focus in light of the pandemic's influence on it in the case of Vietnam. The authors adopted a random-effect model with panel data obtained from 733 listed businesses of stock returns on HOSE and Hanoi Stock Exchange (HNX) for the period from 2<sup>nd</sup> January to 13<sup>th</sup> December 2020. Based on the obtained findings, the Covid-19 daily cases in the country have had a negative effect on the market's returns, [99]. It was noted that the pre-lockdown and second-wave effects were higher in severity

compared to the lockdown period impact, based on industry. It was also notable that the most impacted was the financial sector, with adverse shocks absorbed, as a result of which, the real sector was affected owing to interventions from the government, [100]. The stock market movements during the pandemic were a reflection of the expected outcome.

The response to the COVID-19 pandemic spread should be more detailed, as company performance appears to be sympathetic to social isolation due to the COVID-19 pandemic spread, [101]. [102], discuss the following three features that are unique to the pandemic: a) significant variations in pandemic influence across industries sectors. B) a government intervention level and economic backing for the industry that has never been seen before. C) Due to serial lockdowns, there is a significant expectation uncertainty about the repercussions of the longer-term real sector.

It is critical to identify the various repercussions of a policy of lockdowns that are destructive in numerous industries, such as restaurants, culture, and tourism while pushing the business model up in other areas. Industries that gain from COVID-19 include communication, e-commerce, IT in general, and pharmaceuticals.

As a result, Covid-19 has increased the number of sector failures, posing a danger to the banking sector due to an increase in non-performing loans, [103]. To help struggling businesses, governments implemented a range of preventative measures and fiscal policies, including tax deferrals, government-guaranteed loans, direct cash transfers, and equity-like injections. [104], stated that the Covid-19 epidemic has an impact on business activity, which could damage the banking sector. The COVID-19 outbreak, according to [105], has two implications for the stock market. First, the substantial amount of political, and economic risk induced by the pandemic's spreading characteristics and the ambiguous future stance around COVID-19 resulted in poor cash flow estimates, leading to stock market depreciation.

There is a limited investigation of the effect of COVID-19 on SMR in the existing studies. Thus, compared with the literature, the research determines the reaction and response of the main Jordanian stock exchange sectors to the coronavirus pandemic, the current research deals with indicators of new cases and deaths of infections. Furthermore, the spread of the Coronavirus has been measured relative to the Jordanian population, with all measures adjusted per million. According to a review of the relevant literature such as by [51],

[94], [106] and [107] based on the purpose of the study which is to examine the impact of COVID-19 pandemic (Coronavirus case and death from the Coronavirus) on the Jordanian SMR (Banking Sector Index; Industry Sector Index; Insurance Sector Index; and Service Sector Index).

## 4 Hypotheses Formulation

The coronavirus pandemic has brought about a unique crisis, characterized by its global health impact and the resulting closure of various sectors, including financial markets. Unlike previous crises, the current situation highlights a conflict between prioritizing public health and mitigating economic consequences, [44]. In this case, monetary policies and financial indicators aim to minimize the pandemic's intensity and its economic effects, while the ultimate solution lies in the development and distribution of vaccines. Governments worldwide are compelled to implement strategies for reopening markets and other affected sectors while managing emergencies. Stock market returns reflect the profits or losses derived from invested capital, and they play a crucial role in evaluating equity investments, [108]. Various factors, such as financial performance, capital requirements, and ownership, influence stock returns. Stock markets hold significant importance in global economies, serving as platforms for project evaluation, financing, and promoting sustainable development. Scholars have emphasized the efficiency of stock markets in generating abnormal returns when adjusted for risk, reinforcing their role in investment strategies. The Coronavirus pandemic has had no significant effect on Jordanian SMR (Banking; Insurance; Industry, and Service Sector Index). Therefore, it was divided into two sub-hypotheses:

H1: COVID-19 deaths have a significant influence on the Jordanian SMR consisting of Banking, Insurance, Industry and Service Sector Index.

H2: There are significant differences during and post-COVID-19 Crisis in the Jordanian SMR consisting of the Banking, Insurance, Industry, and Service Sector Index.

## 5 Methodology and Data

For empirical investigation purposes, there are three main types of data; panel, cross-sectional, and time series, [109]. A panel data set involves cross-sectional and over-time series data, [110]. For this secondary study, data was collected from the Amman Stock Exchange which was used to



measure the study's variables as it is considered reliable. Thus, this source is more precise and truthful than other secondary data sources, [111], [112]. This part consists of the variety of features of the empirical investigation to find out the actual application of the effects of COVID-19 on the Jordan Stock Exchange sectors' performance in practical reality by explaining the sample and then analyzing this data using a set of suitable statistical analyses. This was done using the Values of the sectoral indicators of the Jordanian stock market, which are represented by four indicators of the main sectors and cover the interval from 2020 to 2022; daily, at a rate of (512) trading days for the Jordanian Stock Exchange. The Coronavirus pandemic throughout the research period is depicted in Figure 1 and Figure 2:

The current research is based on the action study methodology, where the spread of the Coronavirus is a specific action that started at a specific time, and the data for the SMR are collected during and after this action, and a set of statistical tests are performed to compare the financial performance during and after the spread of this event.

This study concentrated on the spread of Covid-19 as an action. Data were collected during this action for the years 2020 and 2021 and after for the years 2021 and 2022. Thus, the study period covers two years.

This research aims to measure the influence of the Coronavirus spread on the financial performance of the capital markets sectors, and the financial performance of companies can be measured through a set of financial indicators, the most important of which are ROI, ROA, Growth, which represent measures of financial performance. The influence of the Coronavirus spread on financial performance can be measured through the three financial indicators, and accordingly, the research model can be formulated as follows:

$$FP = \alpha + \beta_1 ROI_{it} + \beta_2 ROA_{it} + \beta_3 Growth_{it} + \varepsilon$$

Where:

*FP*: Financial Performance

$\alpha$ : Constant

$\beta_1, \beta_2, \beta_3$ : Model Co-efficient

$ROI_{it}$ : Return on Investment at Sector *I* in Period *T*

$ROA_{it}$ : Return on Assets at Sector *I* in Period *T*

$Growth_{it}$ : Growth Ratio at Sector *I* in Period *T*

$\varepsilon$ : Error Term

ASE's performance was also influenced. The total trading volume decreased from JD 668 million in 2019 to JD 416 million in the same period.

Daily, the spread of the Coronavirus was measured in terms of 'coronavirus cases' and 'coronavirus deaths.' The dependent variable depicts the reaction of Jordan's sectoral indicators, represented by the Banking Sector, Industry Sector, Insurance Sector, and Service Sector Indexes. The Jordanian stock market's daily sectoral indicators are used to track the spread of the Coronavirus.

## 6 Data Analysis and Results

This section discusses the statistical analysis of the research data, where the descriptive statistical analysis of the data is performed, and then the inferential statistical analysis is performed to test the hypotheses. This section can be arranged as follows:

### 6.1 Descriptive Statistics

The descriptive statistical analysis was conducted clarifying the general trend of the research data through the mean and standard deviation tests. The results of the descriptive statistics are presented in Table 2.

Table 2. Search Variables (Descriptive Statistics)

During			After		
Growth	ROA	ROI	Growth	ROA	ROI
-.81	-.31	-.26	-.79	-.23	-.23
-.80	-.28	-.25	-.44	-.20	-.19
-.68	-.22	-.21	-.37	-.20	-.18
-.37	-.18	-.17	-.22	-.12	-.11
-.34	-.17	-.15	-.19	-.12	-.11
-.31	-.16	-.15	-.19	-.11	-.10
-.28	-.15	-.13	-.15	-.09	-.08
-.26	-.13	-.12	.02	.02	.02
-.25	-.13	-.12	.03	.03	.03
-.16	-.11	-.10	.04	.03	.03
-.13	-.09	-.08	.06	.04	.04
-.12	-.08	-.08	.08	.04	.04
-.11	-.07	-.07	.10	.04	.04
-.08	-.03	-.03	.10	.06	.07
-.04	-.02	-.02	.11	.07	.07
.01	.00	.00	.14	.07	.07
.10	.05	.05	.17	.07	.08
.15	.07	.07	.18	.09	.09
.18	.08	.08	.32	.17	.18
.21	.12	.12	.62	.18	.20
.32	.16	.18	1.25	.26	.34
.66	.18	.21	6.50	.46	.71

Source: Descriptive statistics output using SPSS v.26

From Table 2 we can show that:

- The number of observations of the sample sectors was 44, where there are 11 sectors for each sector of 4 years.
- The mean previous closing price of the shares of the companies of the research sample sectors 2.522, at a std deviation of 1.841.
- The mean high price of the shares of the companies of the research sample sectors 3.066, at a std deviation of 3.030.

- The mean low price of the shares of the companies of the research sample sectors 2.176, at a std deviation of 1.617.
- The mean closing price of the shares of the companies of the research sample sectors 2.618, at a std deviation of 2.546.
- The mean of ROI of the companies of the research sample sectors 0.0046, at a std deviation of 0.175.
- The mean of ROA of the companies of the research sample sectors 0.0204, at a std deviation of 0.154.
- The mean of growth of the companies of the research sample sectors 0.096, at a std deviation of 0.1058.

Descriptive statistics can be displayed by displaying the average of financial indicators during and after the spread of coronavirus, with the rise in prevalence rates, so that the financial performance during and after COVID-19 can be compared through the following Table 3:

Table 3. Descriptive Statistics during/after COVID-19

	N		Mean	Std. Deviation
	Valid			
Year	44	2019	1.13096	
B/A	44	1.5000	.50578	
Sector	44	6.0000	3.19884	
Previous year close	44	2.5220	1.84172	
High price	44	3.0668	3.03021	
Low price	44	2.1761	1.61748	
Closing price	44	2.6184	2.54673	
ROI	44	-.0046	.17521	
GROWTH	44	.0965	1.05819	
ROA	44	-.0204	.15460	
Avg price	44	2.6071	2.33592	
Value traded JD	44	9623128.4752	18619179.57177	
No of shares	44	4665387.0386	8163199.50043	
No of trans	44	3705.0763	6935.07550	
Turnover ratio	44	22.2517	65.84982	

Source: Descriptive statistics output using SPSS v.26



Fig. 1: Total COVID-19 Cases in Jordan

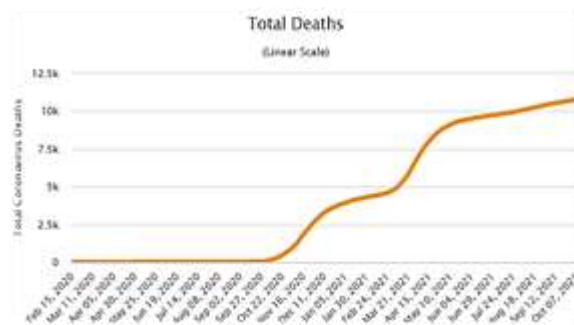


Fig. 2: Total COVID-19 Deaths in Jordan

## 6.2 Testing Hypothesis and Results

To test the main Hypothesis, it was divided into two sub hypotheses; the proposed empirical approach involves the estimate of the following Ordinary Least Squares (OLS) regression equations:

H1: There is a significant influence of New COVID-19 Deaths on Jordanian SMR (Banking; Insurance; Industry, and Service Sector Index).

H2: there are significant differences in Jordanian SMR (Banking; Insurance; Industry, and Service Sector Index) during and after COVID-19 Crisis.

To test the first hypothesis, we can do t test and regression test as follow:

### - T -test

The Independent-Samples T Test procedure is designed to compare means between two groups of cases. In an ideal scenario, these groups should be randomly assigned, ensuring that any observed differences in responses result from the treatment (or the absence of treatment) and not from other variables. However, this ideal setup doesn't apply when comparing the average income between both male and female groups since an individual's gender is assigned randomly. In such cases, it's crucial to account for other factors that may be influencing the observed differences in means. For instance, variations in average income can be affected by factors like education, rather than gender alone. In the equal-variance t-test, the observations must represent independent, random samples from normal distributions with the same population variance. In the case of the unequal-variance t-test, the observations should still be independent, random samples from normal distributions. It's worth noting that the two-sample t-test is relatively robust even when the data deviates from perfect normality. When assessing distributions graphically, focus on their symmetry and check for the absence of outliers.

From Table 4 we can show that:

- There is a significant difference between the ROI values during and after the spread of COVID-19, and these differences are

statistically significant, as the P value is less than 5%.

- There is a significant difference between the growth values during and after the spread of COVID-19, and these differences are statistically significant, as the P value is less than 5%.
- There is a significant difference between the ROA values during and after the spread of Covid-19, and these differences are statistically significant, as the P value is less than 5%.

**- Regression Test**

To assess the hypothesis validity, a test of regression was run on the Jordanian Stock Exchange sectors to determine the influence of changes in the independent factors of the Coronavirus spread on the values of the index returns using the ordinary least squares method.

From Table 5 we can show that:

- There is a significant impact of corona virus on ROI values during and after the spread of COVID-19, where R= 0.228, and this effect is statistically significant, as the P value is less than 5%.

We can see the results of the regression test for growth values in Table 6 where there is a significant effect of COVID-19 on growth values during and

after the spread of COVID-19, where R= 0.303, and this effect is statistically significant, as the P value is less than 5%.

The results of the regression test for ROA values can be seen in Table 7 where:

- There is a significant effect of Covid-19 on ROA values during and after the spread of COVID-19, where R= 0.294, and this effect is statistically significant, as the P value is less than 5%.

**- Compare Coefficients B/A Covid-19**

We can do the regression test to compare financial performance during with after as follows in Table 8:

- There is a significant impact of Covid-19 on the ROI coefficient during and after the spread of COVID-19, where all coefficients has been changed and all P value is less than 5%.
- There is a significant impact for Covid-19 on ROA coefficient during and after the spread of Covid-19, where all coefficient has been changed and all P value is less than 5%.
- There is a significant impact of Covid-19 on the Growth coefficient during and after the spread of COVID-19, where all coefficients has been changed and all P value is less than 5%.

Table 4. Independent Samples Test

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
ROI	Equal variances assumed	-1.515	42	.037	-.47636	.31435
	Equal variances not assumed	-1.515	23.527	.014	-.47636	.31435
Growth	Equal variances assumed	-2.058	42	.046	-.09227	.04483
	Equal variances not assumed	-2.058	40.866	.046	-.09227	.04483
ROA	Equal variances assumed	-1.996	42	.025	-.10182	.05102
	Equal variances not assumed	-1.996	36.121	.036	-.10182	.05102

Table 5. regression results Effect of New Coronavirus on ROI

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.618	.497		-1.243	.221	
	G	.476	.314	.228	1.515	.137	1.000
				Model			
				1			
				R	.228		
				R 2	.052		
				Adjusted R 2	.029		
				Estimate Std. Error	1.04259		
Change Statistics	R 2 Changes		.052				
	F Change		2.296				
	df1		1				
	df2		42				
	Sig. F Changes		.014				
Durbin-Watson				.706			

Table 6. regression results Effect of New Coronavirus on growth

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
2	(Constant)	-.159	.071		-2.245	.030		
	G	.092	.045	.303	2.058	.046	1.000	1.000
				Model				
				2				
				R	.303 <sup>a</sup>			
				R 2	.092			
				Adjusted R 2	.070			
				Estimate Std. Error	.14868			
Change Statistics			R 2 Changes	.092				
			F Changes	4.237				
			df1	1				
			df2	42				
			Sig. F Changes	.046				
Durbin-Watson				.369				

Table 7. Regression results effect of New Coronavirus on ROA

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
3	(Constant)	-.158	.081		-1.955	.057		
	G	.102	.051	.294	1.996	.052	1.000	1.000
				Model				
				3				
				R	.294			
				R 2	.087			
				Adjusted R 2	.065			
				Estimate Std. Error	.16922			
Change Statistics			R 2 Changes	.087				
			F Changes	3.982				
			df1	1				
			df2	42				
			Sig. F Changes	.005				
Durbin-Watson				.410				

Table 8. Coefficient of financial performance during and after Covid-19

	ROI				ROA				Growth			
	During		After		During		After		During		After	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
(Constant)	.973	.007	.007	.010	4.334	.008	-3.655	.008	1.453	.010	-1.28	.010
Year	.000	.007	.007	.010	-.002	.008	.002	.008	-7.194	.010	-4.337	.010
Sector	.002	.009	.009	.007	.000	.009	-.002	.007	5.421	.010	-1.000	.000
Previous year close	.018	.006	.006	.008	-.112	.042	-.017	.008	-1.000	.000	-6.713	.010
High price	-.010	.005	.005	.008	-.007	.009	.006	.009	1.293	.010	-9.941	.010
Low price	-.106	.023	.023	.025	.074	.019	.104	.023	-5.457	.010	1.000	.000
GROWTH	.040	.009	.009	.032	.060	.049	-.030	.045	1.000	.000	5.583	.010
ROA	1.017	.000	.000	.000	5.884	.008	-.077	.008	-3.176	.010	2.857	.010
LEV	.083	.017	.017	.006	-1.73	.008	-2.288	.008	-1.002	.010	-1.469	.010
REV	1.419	.018	.018	.009	3.844	.009	-6.721	.008	4.618	.009	1.419	.010
Size	7.800	.008	.008	.039	.000	.000	.000	.037	-1.795	.001	2.342	.010
No of trans	.000	.009	.009	.017	.999	.000	.000	.047	1.453	.010	6.378	.010
Turnover ratio	.000	.005	.005	.026	-.034	.010	.959	.000	-7.194	.006	6.743	.010

## 7 Results and Discussion

The notable impact of Covid-19 on several financial performance indicators has been well-documented, with the Return on Investment (ROI) coefficient having been significantly affected during and post-pandemic, where changes in all observed coefficients and p-values amounted to less than 5%. During and post-pandemic, the Return on Assets coefficient was also affected, with all coefficients adjusted. Moreover, all of the p-values were no more than 5% for the modified processes. The effect of COVID-19 on growth coefficient was significant on the three processes before, during, and after the existence of the pandemic, with all the p-values not more than 5% for the processes. Therefore, the results showed the significant effect of the pandemic on the financial performance of the processes based on various performance indicators.

The rapid widespread of diseases had a huge impact on the regression lines of various businesses-based performance indicators performance coefficients such as ROI, ROA, and growth. The first rate of changes happened on the ROI coefficient, which suffered huge differences pre- and post-pandemic. It directly indicates how the pandemic affected the firms' profit-making and producing effect. The changes in the coefficient values are indicative of the business's attempt to change its operational methods to survive through the epidemic challenges. Further supporting the statistical importance of the effects are the p-values that were found to be smaller compared to the traditional 5% cutoff.

In the same way, the ROA coefficient also had notable changes during and following the pandemic with changes in coefficient values being a testament to the ability of the companies to turn a profit about the total assets that have been affected. The changes could stem from the effects of the pandemic on the behavior of consumers, disruptions to the supply chain, and the market dynamics changes. All the matching p-values remained less than 5% which supports significant effects.

Finally, the growth coefficient was not spared by the impact, with the growth coefficient indicative of the impact during and following the spread of the coronavirus. The coefficient values changes reflect the business's difficulty in maintaining and enhancing their growth pace and based on the p-values of the growth coefficient that were all lower than 5%, the relevance of the effects was validated.

These results offer strong proof that Covid-19 has had a significant influence on financial performance metrics. Businesses must modify and reevaluate their strategy in response to the continual

problems presented by the pandemic, as indicated by the changes in the coefficients and their statistical significance. These findings have ramifications that go beyond specific businesses because they capture the larger economic environment that COVID-19 has changed.

This study looked at the impact of corona virus on Jordanian business performance utilizing financial data from Jordanian companies that were listed. The research sample consists of Banking Sector Index; Industry Sector Index; Insurance Sector Index and Service Sector Index for which regular data are available through daily reports for the study period, from 03/03/2020 till 30/9/2022. Thus, the current research attempts to verify the impacts of the Coronavirus spread on these four sectors of the Jordanian Stock Exchange. The Corona pandemic was measured by new cases and new deaths on a daily basis from 03/03/2020 until 30/9/2022. The increase of Corona cases is measured relative to the population of Jordan, while the stock exchange return is measured by indices of the Jordanian stock exchange sectors. The findings indicated that the stock markets sectors in Jordan seem sensitive to the increase of the Coronavirus. The number of daily confirmed cases of COVID-19 in Jordan has a positive impact on the returns of the most affected industry sector, as it represents R2 (57.25%), then the banking sector (14.21%), followed by the services sector (12,21%). On the other hand, the results showed that the number of daily COVID-19 cases in Jordan has a negative influence on the returns of the insurance sector as it represents R2 (63.69%). Therefore, for the first Hypothesis, we can reject the null hypothesis and accept the alternative, as the stock exchange return seems more sensitive to new cases of infection with the Coronavirus. In contrast, the new deaths from the Coronavirus do not affect the sectors of the Jordanian stocks exchange according to the second hypothesis results.

[113], have observed that the COVID-19 epidemic led to the emergence of herding behavior within the Indian stock market at the sector level. Similarly, [114], have made claims regarding the pandemic's influence on herding behavior at the sector level in the stock markets of Taiwan and Vietnam. Despite these challenges, the economies within these stock markets exhibit signs of recovery. The COVID-19 crisis has heightened potential losses, prompting management to bolster their financial reserves in preparation for emergencies. While increased cash retention safeguards against potential downturns, it can also hamper long-term business growth by limiting available investment

capital. Return predictability is further influenced by specific industry characteristics. [115], emphasize the substantial impact of the pandemic on the global economy, highlighting that the prevention and control of COVID-19 are currently at a critical juncture. Consequently, the first and second quarters of 2020 witnessed significant shifts in company performance. In navigating the complexities of the COVID-19 outbreak, investors should remain vigilant about fluctuations in returns and prudently manage the associated risks concerning their financial assets.

According to traditional economic and financial theory, stock prices are determined mainly by market and business factors. The impact of the pandemic on the global economy is substantial, and prevention and control of the COVID-19 pandemic are at a crucial stage. The first and second quarters of 2020 have seen significant shifts in company performance. During the COVID-19 outbreak, investors should be aware of the changes in returns and properly handle the risks associated with their financial assets. The COVID-19 epidemic might have far-reaching long-term consequences in the period following the pandemic. The COVID-19 pandemic had varying effects on Jordanian market industries during the pre-lockdown, lockdown, and second-wave periods.

Given the unquestionable and adverse consequences of the COVID-19 pandemic and the continuing increase in the number of infected individuals every day, nations and governments must act swiftly to mitigate the spread of the virus and pursue preventative measures. Indeed, it is necessary to do so to prevent the stock markets from incurring enormous losses in case of subsequent pandemics and outbreaks. The lessons from the COVID-19 crisis demonstrate the value of preparedness, urgency, and successful containment strategies in ensuring that the financial markets remain robust and robust when confronted with unforeseeable global health threats. It is for these reasons that governments and international organizations should consider a comprehensive and proactive approach to developing and implementing policies that will minimize the adverse impacts of such crises on the stock markets and the economy at large. Such an approach will further protect the financial systems and promote stability across the globe, reducing economic vulnerabilities.

Additionally, the empirical results of this study demonstrate that the effects of COVID-19 differ based on the industry. Variations usually affect investor behavior and sentiment, which affects stock prices as a result of events related to the capital

markets. Moreover, a 15% decline in global foreign direct investment is predicted as a result of the present disease outbreak. The impacts of COVID-19 are widespread, affecting many facets of life, and are anticipated to have a lasting effect on the economy. However, the effect size may vary from country to country and from industry to sector. Global stock markets have made significant adjustments in response to the slowing economy. One logical explanation for the responses is that government restrictions on company activity and travel have hurt the service sector, [116]. The results show that Jordanian industries are greatly impacted by the COVID-19 pandemic. COVID-19 is one of the largest challenges facing the globe today.

## 8 Conclusion, Implications, and Future Research

Numerous Literature have focused on the impact of the COVID-19 pandemic on stock market performance in emerging economies. The main purpose of this research is to investigate the effect of the Corona virus on the returns of Jordan Stock Exchange sectors from 2020 to 2022. Therefore, from the panel data framework (trading days for the Jordanian Stock Exchange), the study employed panel regressions techniques. This research finding confirms that the number of new daily cases of COVID-19 in Jordan had a positive influence on the returns of the most affected industry sector, then the banking sector, followed by the services sector. However, it has an unsurprisingly negative impact on the insurance sector. The return of the stock exchange appears to be more sensitive to new cases of infection with the Coronavirus. In contrast, the new deaths from the Coronavirus do not affect the sectors of the Jordanian Stock Exchange.

This research highlights important policy implications for both investors and governments. First, the results show that the insurance industry is negatively impacted by the daily deaths and cases of COVID-19. This means that to protect financial markets from possible drops during upcoming pandemics, governments should put in place efficient control mechanisms and take early, aggressive action. Second, keeping in mind both the advantages and disadvantages of COVID-19 situations, investors ought to think about spreading their portfolios throughout a range of industry sectors. This can lessen the possibility of losses in industries more susceptible to the epidemic. Third, governments should concentrate on offering specific assistance and measures to the industries, banks, and

services sectors, that are most impacted by COVID-19. This can involve offering financial support, offering tax breaks, and enacting laws that encourage recovery and resilience. Fourth, governments should prioritize investments in healthcare infrastructure, resources, and research to effectively manage the pandemic, mitigate long-term economic implications, and enable the implementation of successful public health policies in all of the countries—given the positive impact of COVID-19 cases on the returns of the most affected industry sector and the banking sector. Fifth, governments and investors should improve their risk management techniques and create backup plans that take possible COVID-19 outbreaks or waves into consideration. Making educated decisions and reducing interruptions to the stock market and impacted industries can both benefit from this. Sixth, governments ought to think about integrating the pandemic's lessons into their frameworks for policy, with a focus on creating industry sectors that are resilient and sustainable. This can entail encouraging innovation and the digital transformation of society, growing emergent industries, and diversifying economies. The Jordanian economy is suffering financially as a result of the failure of a large number of organizations; the financial defilement and collapse of numerous organizations as a result of the shortcomings and challenges of executives, [117], [118]. Investors and governments may better manage the pandemic's economic effects and work toward a resilient and sustainable future by taking these policy consequences into account, [119], [120], [121].

Based on the same line of studies, the uniqueness of this study lies in its investigation into the way Covid-19 pandemic has influence ROI of listed firms on the Jordan Stock Exchange, especially following the pandemic. However, this work is not without its limitations that can be useful for future authors to take into consideration. The first limitation is the limited context of the study, which focuses solely on Jordan, and thus, the findings may not be applicable to other countries that have distinct healthcare and economic systems. Future studies can test the findings generalizability to other countries and regions. Another limitation is the large dependence of the conclusion on the accuracy and consistency of data obtained, which covered daily Covid-19 instances, fatalities and stock market returns. As such, future studies may address such data limitation by examining data garnered from other sources or using other methods of data collection to compare the findings.

Moreover, future studies may conduct comparative analyses among nations to determine differences in the effects of Covid-19 pandemic on the industry sectors and stock markets, and in so doing, the elements and policy modifications that are distinct to a particular country can be identified and in-depth findings may be obtained. Another limitation relates to the correlations between Covid-19 cases, industry sectors and stock returns – correlations that may not necessarily indicate causal causation. Such causation may be supported in future studies through reliable methods through the adoption of instrumental variable methods or the use of experimental designs. Also, this study focused on Covid-19 cases and fatalities and how they influence industry sectors and stock returns, and in this regard, there are other variables and factors (e.g., macroeconomic conditions, investors' perceptions, and government steps) that may have a hand in the relationships. Future studies may examine these variables for a more enriching investigation and correlation results between Covid-19 and financial markets. They may also examine Covid-19 resulting effects on the stock markets and industry sectors in the long-term, and the role of other entities, such as social security, central bank and government steps in assisting stock exchange market landscape during a pandemic or other crisis. Finally, future studies can look into the initial influence and the changes throughout time (medium-long term) and the adjustments and recovery of different sectors from the pandemic. Resulting future findings may contribute to explaining the dynamic relationships between Covid-19, industry sectors, and financial markets through the resolution of this study's limitations.

#### *Acknowledgement:*

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia, under the Annual Funding track, [GrantA065].

#### *References:*

- [1] Almaiah, M. A., Hajjej, F., Shishakly, R., Amin, A., & Awad, A. B. (2022). The role of quality measurements in enhancing the usability of mobile learning applications during COVID-19. *Electronics*, 11(13), 1951.
- [2] Karmilasari, C., & Faisal, I. A. (2023). Analysis of determinants of banking



- company's financial performance during the covid-19 pandemic. *Akuntansi dan TeknologiInformasi*, 16(1), 63-87.
- [3] Kumalasari, R. D., Herdina, A. M., Murniati, M., Purnama, P. A., & Prasetyo, Y. T. (2023). EVA as an indicator of financial performance in Tech companies during the Covid-19 pandemic. *Manajemen dan Bisnis*, 22(2), 11-24.
- [4] Lutfi, A.; Alkilani, S.Z.; Saad, M.; Alshirah, M.H.; Alshirah, A.F.; Alrawad, M.; Al-Khasawneh, M.A.; Ibrahim, N.; Abdelhalim, A.; Ramadan, M.H. The Influence of Audit Committee Chair Characteristics on Financial Reporting Quality. *J. Risk Financial Manag.* 2022a, 15, 563. doi: 10.3390/jrfm15120563.
- [5] Macenning, A. R. A. D., Rombbunga, M., & Simanullang, P. (2024). Pandemic and Financial Performance: Pre and During Pandemic Effect of Covid-19 on Financial Performance of Pension Funds Defined Benefit Plans and Defined Contribution Plans. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi dan Bisnis*, 12(1), 579-590.
- [6] Istaiteyeh, R. (2024). Short-and Long-run Influence of COVID-19 on Jordan's Economy. *Advances in Management and Applied Economics*, 14(1), 1-1.
- [7] Lutfi, A. (2023). Factors affecting the success of accounting information system from the lens of DeLone and McLean IS model. *International Journal of Information Management Data Insights*, 3(2), 100202.
- [8] Marei, A. (2023a). Financial performance persistence in islamic and conventional fund family: Developing market evidence. *Decision Science Letters*, 12(4), 659-670.
- [9] Almaiah, M. A., Alfaisal, R., Salloum, S. A., Hajje, F., Thabit, S., El-Qirem, F. A., & Al-Marroof, R. S. (2022b). Examining the impact of artificial intelligence and social and computer anxiety in e-learning settings: Students' perceptions at the university level. *Electronics*, 11(22), 3662.
- [10] Lutfi, A., (2022). Factors Influencing the Continuance Intention to Use Accounting Information System in Jordanian SMEs from the Perspectives of UTAUT: Top Management Support and Self-Efficacy as Predictor Factors. *Economies*, 10(75), 1-17.
- [11] Katsaros, K. K. (2024). Firm performance in the midst of the COVID-19 pandemic: the role of perceived organizational support during change and work engagement. *Employee Relations*, Vol. ahead-of-print No. ahead-of-print, <https://doi.org/10.1108/ER-07-2022-0313>.
- [12] Kim, J., Kim, T., Chang, J. I., Lim, B., & Kim, G. (2024). Evaluating the Change in Performance of Ocean and Fishery Businesses during the COVID-19 Pandemic. *Journal of Coastal Research*, 116(SI), 363-367.
- [13] Almaiah, M. A., Alfaisal, R., Salloum, S. A., Al-Otaibi, S., Shishakly, R., & Al-Marroof, R. S. (2022). Integrating teachers' TPACK levels and students' learning motivation, technology innovativeness, and optimism in an IoT acceptance model. *Electronics*, 11(19), 3197.
- [14] Kristanti, F. T., Riyadh, H. A., Ahmed, M. G., Alfaiza, S. A., Steelyana W, E., & Beshr, B. A. H. (2024). Ownership shares and directors' proportion as majority shareholders on earnings management moderated by board activity. *Cogent Business & Management*, 11(1), 2331099.
- [15] Zheng, F., Zhao, Z., Sun, Y., & Khan, Y. A. (2023). Financial performance of China's listed firms in presence of coronavirus: Evidence from corporate culture and corporate social responsibility. *Current Psychology*, 42(11), 8897-8918.
- [16] Makki, A. A., & Alqahtani, A. Y. (2023). Capturing the effect of the COVID-19 pandemic outbreak on the financial performance disparities in the energy sector: A Hybrid MCDM-Based evaluation approach. *Economies*, 11(2), 61.
- [17] Abuhussein, T., Barham, H., & Al-Jaghoub, S. (2023). The effects of COVID-19 on small and medium-sized enterprises: Empirical evidence from Jordan. *Journal of Enterprising Communities: People and Places in the Global Economy*, 17(2), 334-357.
- [18] Alshirah, M., Alshirah, A., Saad, M., Ibrahim, N. M. E. S., & Mohammed, F. (2021). Influences of the environmental factors on the intention to adopt cloud based accounting information system among SMEs in Jordan. *Accounting*, 7(3), 645-654.
- [19] Lutfi, A. (2021). Understanding cloud-based enterprise resource planning adoption among SMES in Jordan. *J. Theor. Appl. Inf. Technol*, 99(24), 5944-5953.
- [20] Mansour, M., Al Zobi, M. T., Saleh, M. W., Al-Nohood, S., & Marei, A. (2024a). The board gender composition and cost of debt:



- Empirical evidence from Jordan. *Business Strategy & Development*, 7(1), e300.
- [21] Almaiah, M. A., Al-Rahmi, A., Alturise, F., Hassan, & Aldhyani, T. H. (2022). Investigating the effect of perceived security, perceived trust, and information quality on mobile payment usage through near-field communication (NFC) in Saudi Arabia. *Electronics*, 11(23), 3926.
- [22] To, Trung Thanh, and Trinh Bui. 2020. Covid-19 impacts on the economy—Initial evaluation and policy implication. *Journal of Economics and Development*, 274: 23–30.
- [23] Alshirah, M., & Alshirah, A. (2021). Audit committee's attributes, overlapping memberships on the audit committee and corporate risk disclosure: Evidence from Jordan. *Accounting*, 7(2), 423-440.
- [24] Asgary, A., Ozdemir, A. I., & Özyürek, H. (2020). Small and medium enterprises and global risks: evidence from manufacturing SMEs in Turkey. *International Journal of Disaster Risk Science*, 11(1), 59-73.
- [25] Czech, Katarzyna, and Michał Wielechowski. 2021. Energy Commodity Price Response to COVID-19: Impact of Epidemic Status, Government Policy, and Stock Market Volatility. *International Journal of Energy Economics and Policy*, 11, 443–53.
- [26] Qadri, S. U., Raza, M., Qadri, S., Mahmood, S., Ye, C., Rauf, F., & Hossain, M. S. (2023). Overflow effect of COVID-19 pandemic on stock market performance: a study based on growing economy. *Discrete Dynamics in Nature and Society*, 2023, 1-12, <https://doi.org/10.1155/2023/9536571>.
- [27] Bostan Ali, W., Olayinka, J. A., Alam, M. M., & Immelman, A. (2024). Assessing economic implications for micro, small and medium enterprises in Thailand post Covid-19 lockdown. *Plos One*, 19(2), e0294890.
- [28] Al-Khasawneh, A.L., Almaiah, M.A., Alsyouf, A. 2022c. Business sustainability of small and medium enterprises during the COVID-19 pandemic: The role of AIS implementation. *Sustainability*, 14, 5362.
- [29] Mohanty, P., & Mishra, S. (2023). Assessing the impact of COVID-19 on the valuation of Indian companies using a financial model. *International Journal of Emerging Markets*, 18(9), 2133-2151.
- [30] Alsharif, A. H., Salleh, N. Z. M., & Alawed, M. (2024). Exploring global trends and future directions in advertising research: A focus on consumer behavior. *Current Psychology*, 43(7), 6193-6216.
- [31] Marei, A. (2023b). The Moderating Role of Big Data and User Satisfaction in the Predictors of Generalized Audit Software among Jordanian Auditing Firms. *Expert Systems*, 20, 1-11, DOI: 10.37394/23207.2023.20.121.
- [32] Almaiah, M. A., Al-Rahmi, A. M., Alturise, F., Alkhalaf, S., & Awad, A. B. (2022). Factors influencing the adoption of internet banking: An integration of ISSM and UTAUT with price value and perceived risk. *Frontiers in Psychology*, 13, 919198.
- [33] Lufti, A., 2020. Investigating the moderating role of environmental uncertainty between institutional pressures and ERP adoption in Jordanian SMEs. *J. Open Innov. Technol. Mark. Complex*, 6(3), 91.
- [34] Mansour, M., Saleh, M. W., Marashdeh, Z., Marei, A., Alkhodary, D., Al-Nohood, S., & Lufti, A. (2024b). Eco-Innovation and Financial Performance Nexus: Does Company Size Matter?. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(1), 100244, <https://doi.org/10.1016/j.joitmc.2024.100244>
- [35] Almasria, N. A., Aldboush, H. H., Al-Kasasbeh, O., Lutfi, A., Alhajahmad, F. B., Al Barrak, T., & Alsheikh, G. (2024). Oil Price Volatility and Economic Growth: Evidence from the Middle East. *International Journal of Energy Economics and Policy*, 14(3), 417-421.
- [36] Alshira'h, A. F., Alsqour, M. D., Alsyouf, A., & Alshirah, M. (2020). A socio-economic model of sales tax compliance. *Economies*, 8(4), 88.
- [37] Idris, K.M., Mohamad, R., 2017. AIS usage factors and impact among Jordanian SMEs: The moderating effect of environmental uncertainty. *J. Adv. Res. Bus. Manag. Stud.*, 6, 24–38.
- [38] Alkhazaleh, A. M. K., & Marei, A. (2021). Would irregular auditing implements impact the quality of financial reports: Case study in Jordan practice. *Journal of Management Information and Decision Sciences*, 24(6), 1-14.
- [39] Lee, W. Y., Jiang, C. X., & Indro, D. C. (2002). Stock market volatility, excess returns, and the role of investor sentiment. *Journal of Banking & Finance*, 26(12), 2277-2299.
- [40] Alsyouf, A., M.A., Abdo, A.A.K., Al-

- Khasawneh, A.L., Ibrahim, N., Saad, M., 2022. Factors influencing the adoption of big data analytics in the digital transformation era: case study of Jordanian SMEs. *Sustainability*, 14(3), 1802.
- [41] Putra, F., Khoiriyah, M., Abdurrahman, R., & Fatriansyah, A. I. A. (2023). Company Financial Performance Before and During The Covid-19 Pandemic. *MAKSIMUM: Media Akuntansi Universitas Muhammadiyah Semarang*, 13(2), 173-183.
- [42] Almaiah, M. A., Alhumaid, K., Aldhuhoori, A., Alnazzawi, N., Aburayya, A., Alfaisal, R., & Shehab, R. (2022f). Factors affecting the adoption of digital information technologies in higher education: An empirical study. *Electronics*, 11(21), 3572.
- [43] Alsyouf, A., Alsubahi, N., Alhazmi, F. N., Al-Mugheed, K., Anshasi, R. J., & Albugami, M. (2023). The use of a Technology Acceptance Model (TAM) to predict patients' usage of a personal health record system: The role of security, privacy, and usability. *International Journal of Environmental Research and Public Health*, 20(2), 1347.
- [44] World Health Organization. (2020). WHO announces COVID-19 outbreak a pandemic, [Online]. <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020> (Accessed Date: November 7, 2021).
- [45] Al-Khasawneh, A.L., Almaiah, M.A., Alshira'h, A.F., Alshirah, M.H., Alsyouf, A., Al-Khasawneh, A., Saad, M., Ali, R.A., 2022f. Antecedents of Big Data Analytic Adoption and Impacts on Performance: Contingent Effect. *Sustainability*, 14(23), 15516, <https://doi.org/10.3390/su142315516>.
- [46] Zhang, Dayong, Min Hu, and Qiang Ji(2020). "Financial markets under the global pandemic of COVID-19." *Finance Research Letters*, 36, 101528, <https://doi.org/10.1016/j.frl.2020.101528>.
- [47] McKibbin, W. J., & Fernando, R. (2020). The global macroeconomic impacts of COVID-19: Seven scenarios. *Asian Economic Papers*, 20.2 (2021): 1-30.
- [48] Alrfai, M. M., Alqudah, H., Al-Kofahi, M., & Almaiah, M. A. (2023). The influence of artificial intelligence on the AISs efficiency: Moderating effect of the cyber security. *Cogent Social Sciences*, 9(2), 2243719.
- [49] Coronavirus, O. E. C. D. (2020). The World Economy at Risk. OECD Economic Outlook, Interim Report March. <https://www.oecd.org/berlin/publikationen/Interim-Economic-Assessment-2-March-2020.pdf> (Accessed Date: November , 2021)
- [50] World Health Organization. (2021). Coronavirus disease pandemic, [Online]. [https://cdn.who.int/media/docs/default-source/medicines/regulatory-updates/covid-19/38th-who-regulatory-update-on-covid-19\\_12sep2021.pdf?sfvrsn=a17518a9\\_5&dowload=true](https://cdn.who.int/media/docs/default-source/medicines/regulatory-updates/covid-19/38th-who-regulatory-update-on-covid-19_12sep2021.pdf?sfvrsn=a17518a9_5&dowload=true) (Accessed Date: November 7, 2021).
- [51] Ashraf, B. (2020). "Stock Markets' Reaction to COVID-19: Cases or Fatalities?," *Research in International Business and Finance*, 54, 101249, <https://doi.org/10.1016/j.ribaf.2020.101249>.
- [52] Idris, K.M., Mohamad, R., 2016. The influence of technological, organizational and environmental factors on accounting information system usage among Jordanian small and medium-sized enterprises. *Int. J. Econ. Financ.*, Issues 6(7), 240-248.
- [53] Alshirah, M. H., & Alshira'h, A. F. (2022). Political connection, family ownership and corporate risk disclosure: Empirical evidence from Jordan. *Meditari Accountancy Research*, 30(5), 1241-1264.
- [54] Goodell, J.W. (2020). COVID-19 and finance: Agendas for future research. *Finance Research Letters*, 35, 101512, DOI: 10.1016/j.frl.2020.101512.
- [55] Saleh, M. W., & Mansour, M. (2024). Is audit committee busyness associated with earnings management? The moderating role of foreign ownership. *Accounting Research Journal*, 37(1), 80-97.
- [56] Alghadi, M., Alqudah, H., Ananzeh, H., Marei, A., & Al-Matari, Y. (2024). Enhancing cyber governance in Islamic banks: The influence of artificial intelligence and the moderating effect of Covid-19 pandemic. *International Journal of Data and Network Science*, 8(1), 307-318.
- [57] Chaudhary, M., Sodani, P.R., & Das, S. (2020). Effect of COVID-19 on Economy in India: Some Reflections for Policy and Programme. *Journal of Health Management*, 22(2), 169-180, <https://doi.org/10.1177/0972063420935>.
- [58] Marei, A., Mustafa, J. A., Othman, M., Daoud, L., & Lufti, A. (2023). The

- moderation of organizational readiness on the relationship between toe factors and fintech adoption and financial performance. *Journal of Law and Sustainable Development*, 11(3), e730-e730.
- [59] Almasria, N., Airout, R. M., Samara, A. I., Saadat, M., & Jrairah, T. S. (2021). The role of accounting information systems in enhancing the quality of external audit procedures. *Journal of management Information and Decision Sciences*, 24(7), 1-23.
- [60] Khammassi, I., Boufateh, T., & Naoui, K. (2024). The Role of Stress Tests in Enhancing Bank Transparency: A Comparative Study of Islamic and Conventional Banks. *Economics*, 12(1), 71-100.
- [61] Elsayed, A., & Abdelrhim, M. (2020). The Effect of COVID-19 Spread on Egyptian Stock Market Sectors, SSRN, <http://dx.doi.org/10.2139/ssrn.3608734>.
- [62] Alzyadat, J. A., & Asfoura, E. (2021). The Effect of COVID-19 Pandemic on Stock Market: An Empirical Study in Saudi Arabia. *The Journal of Asian Finance, Economics and Business*, 8(5), 913-921.
- [63] Rahmawati, U., & Kholilah, K. (2023). Comparative analysis of financial performance before and during the Covid-19 pandemic. *International Journal of Application on Economics and Business (IJAEB)*, Vol. 1 No. 2 (2023): May 2023.
- [64] Mustafa, J. A., Marei, A., Al-Amarneh, A., & Al-Abbadi, A. (2023). The Role of Fintech Payment Instruments in Improving Financial Inclusion. *Information Sciences Letters*, 12(6), 2659-2670.
- [65] Mansour, M. (2023). Does executive compensation matter to bank performance? Experimental evidence from Jordan. *Banks and Bank Systems*, 18(3), 164-176.
- [66] Al-Qudah, L. A., Ahmad Qudah, H., Abu Hamour, A. M., Abu Huson, Y., & Al Qudah, M. Z. (2022). The effects of COVID-19 on conditional accounting conservatism in developing countries: evidence from Jordan. *Cogent Business & Management*, 9(1), 1-15, <https://doi.org/10.1080/23311975.2022.2152156>.
- [67] Alduais, F., Almasria, N. A., & Airout, R. (2022). The Moderating Effect of Corporate Governance on Corporate Social Responsibility and Information Asymmetry: An Empirical Study of Chinese Listed Companies. *Economics*, 10(11), 1-23, <https://doi.org/10.3390/economics10110280>.
- [68] Alabdullah, T. T. Y., & Asmar, M. (2022). Under COVID-19 pandemic impact: Do internal mechanisms play fundamental role in corporations' outcomes. *Business Ethics and Leadership*, 6(1), 83-91, [https://doi.org/10.21272/bel.6\(1\).83-91.2022](https://doi.org/10.21272/bel.6(1).83-91.2022).
- [69] Jordan Strategy Forum, (2020), Jordan's Financial Sector Performance During the COVID-19 Pandemic, [Online]. <https://www.zawya.com/en/business/jordan-strategy-forum-paper-sheds-light-on-banking-sector-performance-during-virus-crisis-nobleow4> (Accessed Date: November 7, 2021).
- [70] WORLD BANK (2021) Jordan: The World Bank Group adapts its strategy to support COVID-19 response, inclusive and resilient recovery, and continuous ref rm. The World Bank, [Online]. <https://www.worldbank.org/en/news/press-release/2021/05/28/jordan-the-world-bank-group-adapts-its-strategy-to-support-covid-19-response-inclusive-and-resilient-recovery-and-conti> (Accessed Date: November 7, 2021).
- [71] Evans, O. (2020). Socio-economic impacts of novel coronavirus: The policy solutions. *BizEcons Quarterly*, 7, 3-12.
- [72] Lutfi, A., Alkelani, S. N., Alqudah, H., Alshira'h, A. F., Alshirah, M. H., Almaiah, M. A., & Abdelmaksoud, O. (2022g). The role of E-accounting adoption on business performance: The moderating role of COVID-19. *Journal of Risk and Financial Management*, 15(12), 1-19. <https://doi.org/10.3390/jrfm15120617>.
- [73] Lufti, A., & Alqudah, H. (2023). The influence of technological factors on the computer-assisted audit tools and techniques usage during COVID-19. *Sustainability*, 15(9), 1-22, <https://doi.org/10.3390/su15097704>.
- [74] Capelle-Blancard, G., & Desroziers, A. (2020). The stock market is not the economy? Insights from the COVID-19 crisis. Insights from the COVID-19 Crisis (June 16, 2020). *CEPR Covid Economics*. 1-40. <http://dx.doi.org/10.2139/ssrn.3638208>.
- [75] Amman Stock Exchange, [Online]. <https://www.ase.com.jo/ar/news/ada-bwrst-man-khlal-alam-2020> (Accessed Date: June 22, 2021).

- [76] Tissaoui, K., Hkiri, B., Talbi, M., Alghassab, W., & Alfreahat, K. I. (2021). Market volatility and illiquidity during the COVID-19 outbreak: Evidence from the Saudi stock exchange through the wavelet coherence approaches. *The North American Journal of Economics and Finance*, 58, 101521, <https://doi.org/10.1016/j.najef.2021.101521>.
- [77] Samitas, A., Papathanasiou, S., Koutsokostas, D., & Kampouris, E. (2022). Volatility spillovers between fine wine and major global markets during COVID-19: A portfolio hedging strategy for investors. *International Review of Economics & Finance*, 78, 629-642.
- [78] Prasetyo, A., & Faturohman, T. (2023). Financial Distress and Financial Performance Analysis of Highway Companies Before and During the COVID-19 Pandemic: Evidence from Indonesia Stock Exchange. In Comparative Analysis of Trade and Finance in Emerging Economies. *Emerald Publishing Limited*. 31, 151-165, <https://doi.org/10.1108/S1571-038620230000031021>.
- [79] Ball, R. (2009) "The Global Financial Crisis and the Efficient Market Hypothesis: What Have We Learned?". *Journal of Applied Corporate Finance*, 21 (4), 8-16.
- [80] Siddiquei, M. I., & Khan, W. (2020). Economic implications of coronavirus. *Journal of Public Affairs*, 20(4), e2169.
- [81] Aslam, F., Mohmand, Y. T., Ferreira, P., Memon, B. A., Khan, M., & Khan, M. (2020). Network analysis of global stock markets at the beginning of the coronavirus disease (Covid-19) outbreak. *Borsa Istanbul Review*, 20, S49-S61.
- [82] Fernandes, N. (2020). Economic effects of coronavirus outbreak (COVID-19) on the world economy, SSRN, IESE Business School Working Paper No. WP-1240-E, 1-33, <http://dx.doi.org/10.2139/ssrn.3557504>.
- [83] Sagar, R. and Chauhan, B. (2021), Examining the Effectiveness of Various Leadership Styles in Indian Companies during the Covid-19 Pandemic, [Online]. <http://urn.kb.se/resolve?urn=urn:nbn:se:hh:di-va-45493> (Accessed Date: December 16, 2021).
- [84] Alqudah, H., Alrawad, M., Alshira'h, A. F., Alshirah, M. H., Almaiah, M. A., & Hassan, M. F. (2023). Green environmental management system to support environmental performance: what factors influence SMEs to adopt green innovations?. *Sustainability*, 15(13), 1-20, <https://doi.org/10.3390/su151310645>.
- [85] He, Q., Liu, J., Wang, S., & Yu, J. (2020). The impact of COVID-19 on stock markets. *Economic and Political Studies*, 8(3), 275-288.
- [86] Alrawad, M., Lutfi, A., Almaiah, M. A., Alsyouf, A., Al-Khasawneh, A. L., Arafa, H. M., & Tork, M. (2023). Managers' perception and attitude toward financial risks associated with SMEs: Analytic hierarchy process approach. *Journal of Risk and Financial Management*, 16(2), 1-12, <https://doi.org/10.3390/jrfm16020086>.
- [87] Ramelli, S., & Wagner, A. F. (2020). Feverish stock price reactions to COVID-19. *The Review of Corporate Finance Studies*, 9(3), 622-655.
- [88] Alsyouf, A., Ishak, A. K., Alhazmi, F. N., & Al-Okaily, M. (2022). The role of personality and top management support in continuance intention to use electronic health record systems among nurses. *International Journal of Environmental Research and Public Health*, 19(17), 1-30, <https://doi.org/10.3390/ijerph191711125>.
- [89] Qian, G., Yang, N., Ma, A. H. Y., Wang, L., Li, G., Chen, X., & Chen, X. (2020). COVID-19 transmission within a family cluster by presymptomatic carriers in China. *Clinical Infectious Diseases*, 71(15), 861-862.
- [90] Hevia, C., & Neumeyer, A. (2020). A conceptual framework for analyzing the economic impact of COVID-19 and its policy implications. *UNDP Lac COVID-19 Policy Documents Series, 1*, 29, [Online]. <https://www.undp.org/sites/g/files/zskgke326/files/migration/latinamerica/UNDP-RBLAC-CD19-PDS-Number1-EN.pdf>. (Accessed Date: December 15, 2021).
- [91] Al-Awadhi, A. M., Alsaifi, K., Al-Awadhi, A., & Alhammadi, S. (2020). Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, 27, 100326. 1-8, <https://doi.org/10.1016/j.jbef.2020.100326>.
- [92] Almesria, N. A., Aldboush, H. H., Al\_Kasasbeh, O., Lufti, A., Alhajahmad, F. B., Barrak, T. A., & Alsheikh, G. (2024). Oil Price Volatility and Economic Growth: Evidence from the Middle East.



- International Journal of Energy Economics and Policy*, 14(3), 417-421, <https://doi.org/10.32479/ijeep.15484>.
- [93] Bilal, S., Griffith-Jones, S., Kapoor, S., Karingi, S., Songwe, V., & te Velde, D. W. (2020). Saving Africa's private sector jobs during the coronavirus pandemic. ECDPM, ODI, Re-Define, UNECA, 15(15), 1-14, [Online]. <https://stephanygi.net/papers/Saving-Jobs-During-Pandemic-te-Velde-et-al-15-April-2020.pdf> (Accessed Date: December 12, 2021).
- [94] Alber, N. (2020). The Effect of Coronavirus Spread on Stock Markets: The Case of the Worst 6 Countries. 1-11, SSRN, <http://dx.doi.org/10.2139/ssrn.3578080>.
- [95] Pandey, D. K., & Kumari, V. (2021). Event study on the reaction of the developed and emerging stock markets to the 2019-nCoV outbreak. *International Review of Economics & Finance*, 71, 467-483.
- [96] Abodunrin, O., Oloye, G., & Adesola, B. (2020). Coronavirus pandemic and its implication on global economy. *International journal of arts, languages and business studies*, 4(1). 13-23.
- [97] Onali, E. (2020). Covid-19 and stock market volatility, SSRN, <http://dx.doi.org/10.2139/ssrn.3571453>.
- [98] Alber, N., & Refaat, A. (2020). The Effects of COVID-19 Spread on the Egyptian Exchange Sectors: Winners and Losers across Time. 1-29, SSRN, <http://dx.doi.org/10.2139/ssrn.3741179>.
- [99] Hung, D. V., Hue, N. T. M., & Duong, V. T. (2021). The Impact of COVID-19 on SMR in Vietnam. *Journal of Risk and Financial Management*, 14(9), 441.
- [100] Polyzos, S., Samitas, A., & Kampouris, I. (2021). Economic stimulus through bank regulation: Government responses to the COVID-19 crisis. *Journal of International Financial Markets, Institutions and Money*, 75, 101444. 1-23, <https://doi.org/10.1016/j.intfin.2021.101444>.
- [101] Alqudah, H. M. Empowering Internal Auditors' Creativity in Jordanian Ministries: The Effect of Knowledge Sharing and Job Satisfaction. *International Journal of Academic Management Science Research (IJAMSR)*. 7(12). 173-179.
- [102] Marei, A., Abou-Moghli, A., Shehadeh, M., Salhab, H., & Othman, M. (2023). Entrepreneurial competence and information technology capability as indicators of business success. *Uncertain Supply Chain Management*, 11(1), 339-350.
- [103] Gourinchas, P. O., Kalemli-Özcan, Ş., Penciakova, V., & Sander, N. (2020). SME Failures under Large Liquidity Shocks: An Application to the COVID-19 Crisis. National Bureau of Economic Research, [Online]. [https://www.nber.org/system/files/working\\_papers/w27877/w27877.pdf](https://www.nber.org/system/files/working_papers/w27877/w27877.pdf) (Accessed Date: December 10, 2021).
- [104] Wagdi, O., & Rabie, R. (2021). The Impact of COVID-19 Pandemic on Business Activities and Lifestyle: Evidence from Egypt. *Annals of the Romanian Society for Cell Biology*, 25(4). 1-15, [Online]. <https://ssrn.com/abstract=3833971>. (Accessed Date: December 12, 2021).
- [105] Azimli, A. (2020). The impact of COVID-19 on the degree of dependence and structure of risk-return relationship: A quantile regression approach. *Finance Research Letters*, 36, 101648. 1-5, <https://doi.org/10.1016/j.frl.2020.101648>.
- [106] Jasuja, D. & Sharma, P. (2020). "Anticipation of Consequences & Sectoral Impact of COVID-19—An Indian Outlook," *In XV National Conference on Sustainable Management Practices & Economic Slowdown in India*. 1-26, <http://dx.doi.org/10.2139/ssrn.3626278>.
- [107] Pavlyshenko, B. M. (2020). Regression approach for modeling COVID-19 spread and its impact on stock market. *arXiv preprint arXiv:2004.01489*. 1-10.
- [108] Kharabsheh, B., Gharaibeh, O., & Mahafza, A. (2022). Is there an impact of COVID-19 on the returns of the Amman stock exchange. *Investment Management and Financial Innovations*, 19(2), 24-36.
- [109] Gujarati, D. (2009). *Basic Econometrics*. New York: McGraw-Hill, [Online]. <https://thuvienso.hoasen.edu.vn/handle/123456789/8914> (Accessed Date: December 15, 2021).
- [110] Kennedy, P. (2008). *A guide to econometrics*. John Wiley & Sons.
- [111] Alqudah, H., Al Qudah, M. Z., & Alshirah, A. F. (2023). The impact of empowering internal auditors on the quality of electronic internal audits: A case of Jordanian listed services companies. *International Journal of Information Management Data Insights*,

- 3(2), 100183. 1-8,  
<https://doi.org/10.1016/j.jjimej.2023.100183>.
- [112] Fraser, E. D., Dougill, A. J., Mabee, W. E., Reed, M., & McAlpine, P. (2006). Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management. *Journal of Environmental Management*, 78(2), 114-127.
- [113] Dhall, R., & Singh, B. (2020). The COVID-19 pandemic and herding behaviour: Evidence from India's stock market. *Millennial Asia*, 11(3), 366-390.
- [114] Luu, Q. T., & Luong, H. T. T. (2020). Herding behavior in emerging and frontier stock markets during pandemic influenza panics. *The Journal of Asian Finance, Economics and Business*, 7(9), 147-158.
- [115] Phan, D. H. B., Sharma, S. S., & Narayan, P. K. (2015). Stock return forecasting: Some new evidence. *International Review of Financial Analysis*, 40, 38-51.
- [116] Altig, D., Baker, S., Barrero, J. M., Bloom, N., Bunn, P., Chen, S., & Thwaites, G. (2020). Economic uncertainty before and during the COVID-19 pandemic. *Journal of Public Economics*, 191, 104274. 1-13,  
<https://doi.org/10.1016/j.jpubeco.2020.104274>.
- [117] Alawaqleh, Q. A., ALMASRIA, N. A., & ALSAWALHAH, J. M. (2021). The Effect of Board of Directors and CEO on Audit Quality: Evidence from Listed Manufacturing Firms in Jordan. *The Journal of Asian Finance, Economics, and Business*, 8(2), 243-253.
- [118] Masadeh, A. A., Saadat, M., Almasria, N. A., Jrairah, T. S., & Alsawalhah, J. M. (2021). Investigating the role of applying the quality cost approach in the manufacturing system in the public shareholding manufacturing company in Jordan. *Academy of Accounting and Financial Studies Journal*, 25(5), 1-14.
- [119] Khassawneh, A. A. L. (2014). The influence of organizational factors on accounting information systems (AIS) effectiveness: A study of Jordanian SMEs. *International Journal of Marketing and Technology*, 4(10), 36-46.
- [120] Aldboush, H. H., Almasria, N. A., & Ferdous, M. (2023). Determinants of firm profitability: empirical evidence from Jordan's service sector. *Business: Theory and Practice*, 24(2), 438-446.
- [121] Marei, A., Al-Haddad, S., Daoud, L., Habashneh, A., Fariz, R., & Aldamisi, R. (2022). The impact of innovation on customer satisfaction in the commercial banks: Business performance as a mediating variable. *Uncertain Supply Chain Management*, 10(3), 887-894.

#### **Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)**

- Conceptualization: Abdalwali Lutfi, Nashat Ali Almasria, Mohammed Faisal Hassan.
- Data curation: Nashat Ali Almasria
- Formal analysis: Hassan H Aldboush. Fadya Burhan Alhajahmad
- Funding acquisition: Abdalwali Lutfi
- Investigation: Abdalwali Lutfi, Mohammed Faisal Hassan
- Methodology: Fadya Burhan Alhajahmad, Mohammed Faisal Hassan
- Project administration: Abdalwali Lutfi
- Resources: Hassan H Aldboush, Mahmaod Alrawad
- Supervision, Mahmaod Alrawad
- Software: Fadya Burhan Alhajahmad
- Validation: Abdalwali Lutfi
- Visualization: Mohammed Faisal Hassan
- Writing – original draft: Nashat Ali Almasria,
- Writing – review & editing: Abdalwali Lutfi, Mahmaod Alrawad

#### **Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself**

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia, under the Annual Funding track, [GrantA065].

#### **Conflict of Interest**

The authors have no conflicts of interest to declare.

#### **Creative Commons Attribution License 4.0 (Attribution 4.0 International, CC BY 4.0)**

This article is published under the terms of the Creative Commons Attribution License 4.0

[https://creativecommons.org/licenses/by/4.0/deed.en\\_US](https://creativecommons.org/licenses/by/4.0/deed.en_US)