THE IMPACT OF CORONA PANDEMIC (COVID-19) IMPLICATIONS ON THE OPERATIONAL PERFORMANCE IN THE INDUSTRIAL SMALL AND MEDIUM-SIZED COMPANIES IN JORDAN

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ABSTRACT

This study aimed at measuring the impact of corona pandemic (covid-19) implications on the operational performance in the industrial small and medium-sized companies in Jordan and measuring the impact of the consequences of the pandemic on the operational performance in the light of the type of the company. The study population and sample consisted of the employees of the financial departments. An electronic questionnaire was developed to collect the study data, where more than (400) electronic questionnaires were distributed. (298) questionnaires were returned and only (291) questionnaires were valid for analysis. In order to answer the study questions and test its hypotheses, (SPSS) was used, where the descriptive analysis was performed and the hypotheses were tested. The results showed that the impact level of corona pandemic consequences on the operational performance was medium, while they affected cost and quality with a low degree, and on productivity with a medium degree. The results revealed that there is an impact of the consequences of corona pandemic on the operational performance according to the variable of the company type. The study recommended the necessity of working constantly to promote the levels of operational performance of the industrial small and medium sized enterprises, reduce the cost of production, maintain the quality of products and improve productivity.

Keywords: Implications of Corona Pandemic, Operational Performance, Cost, Quality, Productivity, Industrial Small and Medium Sized Companies.

INTRODUCTION

Corona pandemic is considered as one of the most dangerous crises experienced by the global economy currently, where almost all the previous crises were financial in nature and were encountered via the economic policies. However, corona pandemic has an obvious and direct effect on the human resources, and thus its implications is the most dangerous on the global economy and requires different policies to deal with it. The continuity of this pandemic may result in long term negative effects on the healthy, social, economic and political domains.

The consequences of corona pandemic resulted in a considerable decline in the transfer of cash money and economy at the world level and the threatened the tools of money and economy by complete depression through the preventive measures that were taken which, in turn, restricted the ability to proceed work, performance, productivity and operation; a case that was adversely resulted in unexpected risks and losses.

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Corona pandemic adversely affected the industrial sector, where almost all industries encountered challenges related to the economic circumstances. Currently, the industrial sector tackles serious stressors resulting from corona pandemic. Therefore, the affected companies that desire to stay within the competitive market should adapt with the pandemic and perform radical changes in their operational performance.

For example, several industrial companies witnessed a sharp decrease in productivity, an increase in unemployment rates, increased stored products, a decrease in raw materials, imbalance in supply chain, a decrease in sales and production revenues, shut down of factories, as well as less demand for certain products and more demand for others.

The industrial small and medium sized enterprises can reduce the effects of corona pandemic on their operational performance by focusing on the dimensions of operational performance (costs, quality, productivity).

The Study Problem

Currently, the industrial sector encounters excessive stressors resulting from corona pandemic, and that affects its ability to achieve distinctive performance and improve its operational performance. The environment surrounding the industrial sector witnessed increased changes; therefore, it was necessary for the industrial companies that desire to stay within the competitive market to adapt with the pandemic and perform radical changes in their operational performance by reducing production costs, providing high quality products and increasing productivity.

Therefore, the problem of the current study is represented in its attempt to answer the following questions:

1) What are the implications of corona pandemic on operational performance in the industrial small and medium sized enterprises?
2) What are the implications of corona pandemic on the operational performance of the industrial small and medium sized enterprises in the light of the type of the industrial sector?

The Study Importance

The study importance stems from the problem that it is addressing, represented by identifying the impact of the implications of corona pandemic on the operational performance in the industrial small and medium sized enterprises. The scientific importance of the study is derived from the novelty of the topic, related to measuring the impact of corona pandemic on the current operational performance of the industrial small and medium sized enterprises.

The Study Objectives

The current study aims to:

1) Introducing a brief idea about the history for the emergence of corona pandemic, its definition and effect.
2) Measuring the impact of corona pandemic on the operational performance of the industrial small and medium sized enterprises.
3) Measuring the impact of corona pandemic on the operational performance of the industrial small and medium sized enterprises in the light of the company type.

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The Study Hypotheses

In the light of the study problem and objectives, the current study aimed to test the validity of the following hypotheses:

H1*: there is no statistically significant impact at (α≤0.05) regarding the implications of corona pandemic on the operational performance of the industrial small and medium sized enterprises.*

The following sub-hypotheses are derived from this hypothesis:

H1.1*: there is no statistically significant impact at (α≤0.05) regarding the implications of corona pandemic on the cost in the industrial small and medium sized enterprises.*

H1.2*: there is no statistically significant impact at (α≤0.05) regarding the implications of corona pandemic on the quality in the industrial small and medium sized enterprises.*

H1.3*: there is no statistically significant impact at (α≤0.05) regarding the implications of corona pandemic on the productivity in the industrial small and medium sized enterprises.*

H2*: there are no statistically significant differences at (α≤0.05) regarding the implications of corona pandemic on the operational performance of the industrial small and medium sized enterprises attributed to the type of the company.*

The Study Variables

The current study consists of one independent variable (the implications of corona pandemic), in addition to the dependent variable (operational performance), represented by (cost, quality, productivity) as illustrated in the study model.

The Study Model

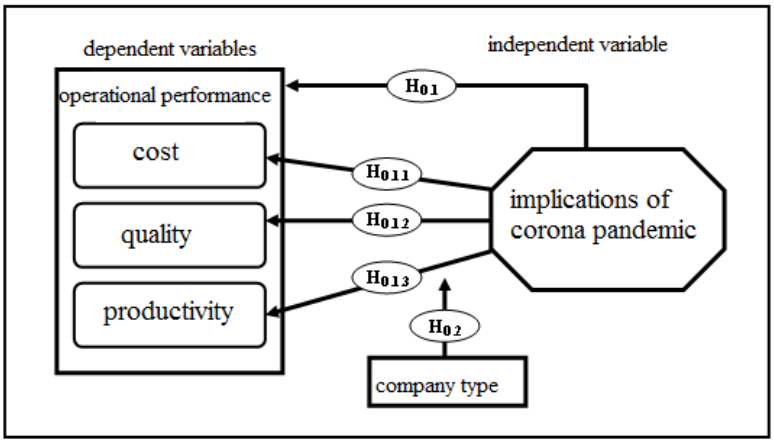

FIGURE 1
THE STUDY MODEL

The Study Limits

The current study is limited to

The human limits: They included all the employees of the financial departments in the small and medium sized industrial enterprises.
The spatial limits: The small and medium sized industrial enterprises.
The temporal limits: The study was applied towards the end of the first year of corona pandemic.

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The Theoretical Framework

The Emergence of Corona Pandemic

The latest periods of the year 2019 witnessed the emergence of a number of cases related to "pneumonia with unknown cause "in the Chinese city of Wuhan. On the 30th, December, 2019, the health committee in the city of Wuhan issued an urgent statement about the spread of corona virus (covid-19), implying that the virus is dangerous to the public health (BDO, 2020).

On 31st, December, 2019,China informed the world health organization (WHO) about this virus (Mahase, 2020). On 30th, January, 2020, the emergency committee of the world health organization announced the outbreak of the disease, and that it is dangerous to public health at the global level. On 11th, March, 2020, the world health organization stated that the outbreak of corona virus could be qualified as a pandemic (ICPAC, 2020).

(Covid-19) could be considered as a global health threat (Wang, et al, 2020). It is mainly considered as the largest outbreak of atypical pneumonia since the outbreak of Severe acute respiratory syndrome (SARS) in 2003, where the number of injuries and deaths in several weeks surpassed the total number of injuries and deaths in (SARS) virus (Hawryluck, et al, 2004).

The emergency committee for the global health panels of the world health organization stated that the outbreak of corona virus has become within the status of "public health emergency of a global interest". Since that time, more cases were diagnosed in other countries throughout the world (EY, 2020). The world health organization viewed corona virus as an epidemic on 11th, March, 2020 (Whitehouse, 2020), after realizing the speed of its outbreak and the rapid implications of infection on the health of humans, communities and economy.

According to the world health organization, corona virus spread quickly in January; however, it rapidly outbroke in South Korea, Japan and Europe, particularly in Italy, France, Spain, and reached the USA in late January and early February; percentages increased quickly in the different countries all over the world. Since the beginning of this pandemic, the international governments took strict measures to isolate the infected cases, stop infection and slow down spread rate. Efforts were made to isolate the individuals who suffer from diseases, collective meetings were banned, schools were closed and home quarantine became mandatory (WHO, 2020).

The Definition of Corona Virus

Corona virus is considered as one of the major groups of viruses that causes diseases to animals and humans. It is well-known that several types of corona virus cause infections that range in severity from common chills to more severe cases, such as Severe acute respiratory syndrome (SARS) .Whitehouse, 2020 defined corona virus as the type of viruses that mainly affects the respiratory system of animals and mammals; it is one of the medically seven well-known types, which caused a considerable amount of stress throughout the world. This epidemic is more related to the occurrence of chills, pneumonia and bronchitis. Its symptoms are dry cough, fever and dyspnea.

The Impact of Corona Pandemic

Corona pandemic affected financial and economic markets, where almost all industries faced challenges related to the economic circumstances resulting from the exerted efforts to deal with the pandemic. For example, several companies in the field of transport, hospitality, recreation

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and retail witnessed a sharp decline in revenues, in addition to the fluctuations in financial markets, a decline in credit, fear of liquidity, other increases in governmental intervene, an increase in unemployment, a large decrease in customers' estimated expenditure, an increase in reservations, a decrease in production due to the low demand levels as well as the retirement of employees and restructuring (Mahmoud & Hassan, 2020).

Undoubtedly, there are core effects of corona pandemic on humanity as a whole, where the pandemic affected the social, healthy, political and economic domains, to the extent that there was a dispute regarding the importance of keeping people healthy at the expense of the safety of the economic activity since each one of them affects the other. In this vein, maintaining the public health entails taking the necessary preventive measures that affect the economic domain in a negative way, and vice versa, since reducing the preventive measures increases the spread of corona pandemic. Indeed, each direction has its advantages and disadvantages and balance between them is confusing as it is not based on any satisfactory evidences (Abu Talib, 2020).

Certainly, corona virus is considered as one of the most serious issues faced by the global economy in the current time, since all the pervious crises were financial in nature and the governments faced them through the economic policies; however, corona crisis has a direct and obvious effect on the human resources, and thus its implications are more dangerous on the global economy and require different policies to deal with them (Al-Baha'i & Al-Bajlati, 2020).

(Davies, 2020) suggested that the most important consequence of corona virus is the cessation of production and the fluctuations of supply chain, the unemployment, reduction of sales, revenues and productivity, the shutdown of companies and stores as well as the delay of planned actions, the inability to increase funding and the increase of fluctuations in the value of financial tools. (Richter, 2020) posed some questions about the economic implications of corona pandemic on the chain of supplies, sales, infections of corona virus, the fluctuations of market prices and the cash flow of the company.

The various measures taken by several countries around the world resulted in a cessation of some business in addition to the severe decline in the global supply chain, the decline of demand concerning several services and goods as compared to a demand increase for other products and services. The sectors of tourism and recreation as well as aviation are the most disadvantaged from the various measures for the outbreak of corona pandemic, while at the same time there was an increase in demand for medical masks, alcohol, artificial respiration devices and the other products related to the sector of medications and health care (Al-Tahhan & Mahmoud, 2020)

The continuity of these conditions could lead to a broader economic decline which may have an adverse long-term effect on the financial status of companies (Danyluk, 2020). According to the organization of economic cooperation and development (OCED), corona virus has a considerable risk on the global economy and has similar consequences of the global financial crises. Therefore, most companies could be affected by its implications, in that each company should reevaluate its activities and practices while taking into consideration the condition and special case of each company.

Corona virus also affects the industrial companies in several ways, such as the lack of employees and materials or the unplanned cessation of factories, where these factors could lead to unusual decline in the levels of protection (Danyluk, 2020).

The consequences of corona pandemic resulted in a sharp decline in the transfer of cash money and economy at the global level and threatened the tools of money and economy by complete depression based on unprecedented preventive measures that restricted work procedures, performance, production and operation which was, in turn, reflected on individuals and businesses facilities by unexpected risks and losses (Yousef, 2020).

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According to a survey conducted by the United Kingdom Office of national statistics in May, 2020, the economic activities scored a decline of more than (25%) in the industrial sector because of corona pandemic. The results also revealed that (60%) of the respondents suggested a noticeable decline in the productivity of employees due to reasons related to security, health, vocational instability as well as cancelling annual incentives and rewards (Al-Kawsri, 2020).

Operational Performance

Organizational performance is divided into two main types: financial performance and operational performance. Financial performance is defined as the performance relating to results, such as profitability, whereas operational performance is related to the determinants of those results, such as productivity, quality and so on (Saunila, 2014).

There were conflicting results concerning the dimensions of operational performance (Idris & Al-Ghalibi, 2009).Many researchers in the domain of production and processes management attempted to control the dimensions of operational performance, where researchers and authors had various opinions concerning those dimensions. However, most researchers agreed upon cost, quality, flexibility and delivery as dimensions for operational performance (Saif Al-Deen & Yousef, 2019), while (Searcy, 2009) determined the dimensions of operational performance as follows: cist, quality, flexibility and speed in delivering services.

The importance of operational performance is manifested by the following points (Dorra and Al-Sabagh, 2019):

1) An index that measures the extent to which the company achieved its objectives.
2) Helping the company and its management in judging the implementation of the required tasks to individuals and the degree of success in achieving them.
3) Helping the companies to achieve sustainability in their activities by improving and developing performance.
4) Identifying the skills of employees and their potentials in the company.
5) An index through which principals can measure the performance of employees in relation to the tasks delegated to them as well as their readiness to do other tasks in the future.
6) It contributes to linking the financialand morale incentives obtained by the employee with his performance level, and that enhances their motivation, increases productivity and improves performance.

The Dimensions of Operational Performance

By reviewing the three dimensions of operational performance, the following three dimensions were determined:

Cost

It refers to the material lor monetary sacrifice to obtain an element with a certain economic value; goods, services or other form of benefit. Cost could be in the form of tangible objects, such as materials and machines or they could be intangible, such as salaries, payments for electricity or housing (www.almerja.com). The product cost is the cost that is financially related to the production process. It consists of the direct elements of materials, the direct costs and the indirect industrial costs (Joudeh, 2010). It was also defined as the cost obtained after the conversion processes to obtain a certain product or service (Nihad & Ronqdour, 2019).

Quality

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Quality is defined as a measure of distinction and being free of setbacks or big differences. Quality is achieved by following a number of standards that lead to producing a better product that satisfies the requirements of customers (Business Dictionary). It is also considered as a basic characteristic of acertain service or product that allows comparing it with another service or product of the same type. Therefore, quality refers to matching the characteristics that satisfy all the expectations that satisfy the consumer (Diaz,2014). It is also defined as a set of inherent characteristics for a certain being that allows that being to satisfy the explicit and implicit needs. Quality is one of the most important features that help companies and institutions to continue and develop. It promotes the company's reputation, protects it against risks, increases its profits, and promotes its efficiency in order to persist and develop; it achieves happiness and satisfaction to all the parties, including citizens, consumers and the community as a whole. Therefore, quality is concerned about introducing good results by making advantage of opportunities to achieve the best results (www.quality.org).

Productivity

It is one of the most prominent terms and the most widely used in the industrial and economic domains as well as the different work domains. Productivity is a strong index to the extent to which the elements of production are able to cooperate to achieve a correct productive process. Productivity is a measure for the ability of companies to achieve outputs out of inputs. It is also defined as the possibility of achieving the most possible outcomes based on certain incomes (Business Dictionary).Improving productivity focuses on raising the efficiency of the performed work. Hence, we can say that the ideal successful facilities include an effective work environment and the elements of production are interrelated to each other. Indeed, the humans represent the most important factor in the production process, where it enables companies to make use of the raw materials, implement production processes to them and manage the facility well. In order to improve the human element so that employees do their tasks at their best, they should enjoy comfort means, have vocational security, obtain a payment and incentives that correspond with the exerted efforts, be treated fairly and distances should be reduced between employees and employers. All these procedures contribute to raising the employee's efficacy which, in turn, improves the level of productivity (Jackson).

The Applied Framework

This part addresses a description of the study methodology, the study population, the study sample, resources of collecting data, the steps of preparing and developing the study instrument as well as verifying its validity and reliability, introducing the results of data analysis and testing hypotheses and referring to statistical methods used for data processing.

Previous Studies

Furceria, et al., (2021). Recessions and Total Factor Productivity: Evidence from Sectorial Data.

The recent COVID-19 crisis has generated a concern that productivity (which was already at historically low levels) may further decline. From a theoretical standpoint, the recessions-total factor productivity (TFP) nexus is ambiguous à priori. This paper empirically examines the dynamic impact of recessions on TFP. We compute a new measure of utilization-adjusted

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productivity from a sample of 24 industries in 18 advanced economies between 1970 and 2014. Resorting to the local projection method we trace out the dynamic short to medium-term impact of such recessionary shocks. We find that deep recessions lead to a permanent deterioration in the level of total factor productivity. This effect is driven by the increase in resource misallocation across different sectors.

Bloom, et al. (2020). The Impact of Covid-19 on Productivity

We analyze the impact of Covid-19 on productivity in the United Kingdom using data derived from a large monthly firm panel survey. Our estimates suggest that Covid-19 will reduce TFP in the private sector by up to 5% in 2020 Q4, falling back to a 1% reduction in the medium term. Firms anticipate a large reduction in 'within-firm' productivity, primarily because measures to contain Covid-19 are expected to increase intermediate costs. The negative 'within-firm' effect is partially offset by a positive 'between-firm' effect as low productivity sectors, and the least productive firms among them, are disproportionately affected by Covid-19 and consequently make a smaller contribution to the economy. In the longer run, productivity growth is likely to be reduced by diminished R&D expenditure and diverted senior management time spent on dealing with the pandemic.

Dwaidi,et al, (2020). Special Issue on the Economic Effects of the Corona Pandemic

Today, the world is exposed to the risk of coronary virus disease (COVID 19), which has become a "pandemic". Where air transport contributed strongly to advancing economic development by activating commercial and social movement. As air transport activities are affected by this pandemic, we assume in this research paper that there is a negative impact of the coronary virus pandemic COVID 19 on all aspects of sustainable development through air transport, as it was found that the coronary virus pandemic COVID 19 has different impact in terms of the contribution of air transport to sustainable development, where The economic and social aspect of development was affected negatively while the environmental side was affected positively, where was this study achieved through the descriptive analytical approach.

Khudhair, et al., (2020). The Impact of COVID-19 on Human Resource Management Practices and Future Marketing.

The increased prevalence of COVID-19 has had severe implications on the well-being of most organization and professionals most especially in the field of human resource management and marketing. This study focused on establishing the impact of COVID-19 on the different human resource practices and future marketing. It was established that the dynamics of work have greatly changed from the traditional way of working from the organization's premises to working remotely at home. Consequently, marketing has also shifted to different online platforms since physical contact with customers is currently prohibited in order to maintain in social distancing one way of preventing coronavirus. These changes have been associated with different negative implications and some positives as some professionals find it more flexible and convenient to work remotely. To cope with the current changing times, it is necessary for organization to adjust and adopt the new emerging technologies of working remotely and consequently implement strategic policies and procedures towards maintaining a steady flow.

Shen, et al., (2020). The Impact of the COVID-19 Pandemic on Firm Performance.

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Using the financial data of listed Chinese companies, we study the impact of COVID-19 on corporate performance. We show that COVID-19 has a negative impact on firm performance. The negative impact of COVID-19 on firm performance is more pronounced when a firm's investment scale or sales revenue is smaller. We show, in an additional analysis, that the negative impact of COVID-19 on firm performance is more pronounced in serious-impact areas and industries. These findings are among the first empirical evidence of the association between pandemic and firm performance.

Udofia, et al. (2020). Supply Disruption in the Wake of COVID-19 Crisis and Organizational Performance: Mediated by Organizational Productivity and Customer Satisfaction.

This study aims to test the impact of the coronavirus (Covid-19) pandemic on large firms, with regard to a supply disruption, productivity, customer satisfaction and firm performance. A cross-sectional survey design and stratified sampling technique were implemented for employee selection and data gathering. Confirmatory factor analysis (CFA) was used to examine the data and model fitness, while the structural equation model was used for hypotheses testing. The pandemic triggered supply disruptions, but did not significantly impact the productivity of manufacturing firms directly. However, supply disruption positively and significantly impacted productivity. Organizational productivity had no significant impact on customer satisfaction, however, when mediating the relationship between Covid-19 and customer satisfaction, it produces a positive indirect effect. Finally, Covid19 and supply disruption when mediated by organizational productivity both had negative significant relationships on performance. Disruptions are inevitable, managers must balance the pursuit of customer satisfaction and productivity so that one does not erode the other. Emphasis must be channeled towards managing the productivity of the firm to maintain customer satisfaction during these uncertain times. Deliberate steps like manufacturing flexibility investments should be initiated.

The Practical Framework

This part includes a description of the study methodology, the study population and sample, the resources of data, the steps of preparing and developing the study instrument as well as its validity and reliability, displaying and analyzing the study results, testing the hypotheses and the statistical methods used in data processing.

The Study Methodology

The study used the descriptive analytical approach which aims to provide data about companies and individuals, in addition to developing a questionnaire to collect the required data to answer the study questions and test its hypotheses.

The Study Population and Sample

The study population and sample consisted of the employees of the financial departments in the industrial small and small sized enterprises. An electronic questionnaire was developed to collect data. (400) questionnaires were distributed; (298) questionnaires were returned and (291) questionnaires were valid for analysis.

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The Resources of Data Collection

The study used two resources:

The Theoretical Resources

The theoretical framework of the study consisted of the relevant Arabic and foreign studies as well as the articles, reports and previous researches that addressed the study topic. Also, the electronic resources and databases available via the internet were employed in order to obtain the most recent information about the topic.

The primary resources

The primary resources were represented by the questionnaire (the study instrument), where it was developed to be compatible with the study nature. The significance of the study was cited by deducting the scientific dimensions that include the study variables based on the previous literature.

The Study Instruments

The questionnaire was developed as the study instrument, where it was designed in a way that is compatible with the study variables by reviewing the relevant previous studies. The instrument included the questions related to measuring the impact of the implications of corona pandemic on the operational performance by using (45) items distributed to (3) dimensions, with (15) items in each dimension to measure the three hypotheses of the study.

The Study Validity and Reliability

The Apparent Validity

The study instrument was introduced to a number of specialized administrative staff. After reading the items of the questionnaire, they suggested some modifications upon which the researchers performed the required modifications.

The Reliability of the Study Instrument

The reliability of the study instrument was verified by using (Cronbach Alpha), where the result was statistically accepted if it exceeded (0.70), and approached more towards (1)) (Sekaran and Bougie, 2020). After calculating Cronbach alpha, the value ranged between (83.7% - 89.8%), and the overall indicator of all the items was (91%), which is more than (0.70); therefore, the study instrument is considered as reliable.

The Used Statistical Methods

In order to answer the study questions and test its hypotheses, (SPSS) was used to perform the descriptive analysis and test the study hypotheses by using the following statistical methods: frequencies, percentage, skewness coefficient, kurtosis values, means, standard deviations, ranks, (Cronbach alpha), (t-test), one-way Anova and Scheffe test.

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Describing the Demographic Characteristics of the Study Sample

This part of the study aimed at demonstrating the frequencies and percentages for the demographic characteristics of the study sample. Table (1) shows the frequencies, and percentages for the demographic characteristics of the study sample individuals.

Table 1
THE FREQUENCIES AND PERCENTAGES OF THE STUDY SAMPLE INDIVIDUALS

Number	Categories	Frequency	Percentage	Number	Categories	Frequency	Percentage
Age				**Job status**			
1	Less than 25 years	27	9%	1	Financial manager	29	%10
2	25- less than 35 years	171	59%	2	Financial manager assistant	43	%15
3	35- less than 45 years	66	23%	3	Financial accountant	149	%51
4	45- less than 55 years	18	6%	4	Cost accountant	43	%15
5	More than 55 years	9	3%	5	Administrative accountant	27	%9
Total		291	100%	Total		291	100%
Specialty				**Educational qualification**			
1	Accounting	218	%75	1	Bachelor	235	81%
2	Business administration	49	%17	2	Master	46	16%
3	Banking and Finance	18	%6	3	PhD	3	1%
4	Economy	6	%2	4	Others	7	2%
Total		291	100%	Total		291	100%
Years of experience				**Professional certificates**			
1	Less than 5 years	42	14%	1	CPA	4	1%
2	5- less than 10 years	89	31%	2	CMA	3	1%
3	10- less than 15 years	94	32%	3	JCPA	6	2%
4	15- less than 20 years	39	13%	4	MBA	2	1%
5	20- less than 25years	22	8%	5	No professional certificate	276	95%
6	More than 25 years	5	2%				
Total		291	100%	Total		291	100%

The previous table shows that most study sample individuals are rational, where they hold university degrees in different specialties, work in different job positions and have good experiences that qualify them to understand the study topic, and that few of them hold professional certificates.

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Normal distribution test

Skewness coefficient was calculated, where it is used to measure the balance of distribution. The value outside (+1) reveal that the distribution is extremely deviant. The value of Kurtosis was calculated, where the distribution is considered normal if the Kurtosis value doesn't exceed (± 2.58) at the significance level of (0.01) and (±1.96) at the significance level of (0.05) (Hair et.al.2018).

Table 2
THE NORMAL DISTRIBUTION OF DATA USING (SKEWNESS AND KURTOSIS)

Variables	Operational performance	Cost	Quality	Productivity
Skewness	0.018	0.011	-0.173	0.141
Kurtosis	0.265	-0.842	1.11	-0.563

Based on the test data illustrated in table (2), it is obvious that the distribution was normal, where the values of Skewness weren't outside (+1), and the Kurtosis values didn't exceed (±1.96) at the significance level of (0.05).

Describing the Study Results and Testing its Hypotheses

Describing the Study Results

Means, standard deviations, rank, relative weight and degree of agreement were calculated in order to identify the opinions of the study sample individuals about the items of the study. The length of relative agreement was calculated according to the following formula: category length =the highest level of the alternative – the lowest level of the alternative /the number of levels; 5-1/3=1.33. If the mean ranged between (1-1.33), the level is considered as low, if the mean ranged between (2.34- 3.66), the level is medium, and when the mean exceeds (3.66), the level is considered as high (Subedi, 2016). The results of descriptive analysis for the study variables were as follows:

The Implications of Corona Pandemic on Cost

a. Table (3) shows the means, standard deviations and order for the responses of the sample individuals concerning the implications of corona pandemic on cost in the small and medium sized industrial companies.

Table 3
MEANS, STANDARD DEVIATIONS AND ORDER FOR THE RESPONSES OF THE STUDY SAMPLE INDIVIDUALS TOWARDS THE IMPLICATIONS OF CORONA PANDEMIC ON COST IN THE SMALL AND MEDIUM SIZED INDUSTRIAL COMPANIES

Item number	Item	Mean	SD	Percentage	Degree of agreement	Rank
1	Corona pandemic resulted in inaccuracy in measuring the cost of products	2.62	0.804	56.4	Medium	14
2	Corona pandemic resulted in a lack in the effectiveness of surveillance over the elements of cost	2.15	0.854	53	Low	15
3	Corona pandemic led to an increase in the cost of buying	3.32	0.896	66.4	Medium	6

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	raw materials from suppliers					
4	Corona pandemic resulted in an increase in the amount of payments	2.89	0.877	57.8	Medium	13
5	Corona pandemic led to a difficulty in assigning the indirect cost clearly and accurately	3.1	0.872	62	Medium	10
6	Corona pandemic resulted in lack of commitment in paying costs due to lack of liquidity	3.34	0.978	66.8	Medium	3
7	Corona pandemic resulted an increase in the costs due to a decline in production amount	3.72	0.971	64.4	High	1
8	Corona pandemic led to affording additional industrial costs	3.31	0.928	66.2	Medium	7
9	Corona pandemic resulted in a difficulty in preparing the periodic costs reports	2.94	0.966	58.8	Medium	11
10	Corona pandemic led to a difficulty in analyzing and processing the deviances in cost elements	2.92	0.92	58.4	Medium	12
11	Corona pandemic resulted in an increase in the cost of storage	3.11	0.978	62.2	Medium	9
12	Corona pandemic led to a difficulty in determining the targeted cost	3.33	0.91	66.6	Medium	4
13	Corona pandemic resulted in an increase in costs and that led to a decline in the levels of revenues as compared to the previous years	3.32	0.995	66.4	Medium	5
14	Corona pandemic resulted in an inefficiency in planning, surveillance and decision making and that led to an increase in the cost of produced units	3.18	0.979	63.6	Medium	8
15	Corona pandemic led to an increase in costs and that affected the competitive advantage	3.67	0.969	69.4	High	2
	Total index	3.13	**0.595**	62.60%	Medium	

Table (3) showed that the implications of corona pandemic on cost had a mean of (3.13) and a standard deviation of (0.595), with a percentage of (62.6%) of the total scale. This indicates that the implications of corona pandemic on cost were within the medium range from the perspective of the study sample individuals. The item (7) stating "Corona pandemic resulted an increase in the costs due to a decline in production amount" was in the first place with a mean of (3.72) and a standard deviation of (0.971), while the item (2) stating "Corona pandemic resulted in a lack in the effectiveness of surveillance over the elements of cost" was in the last place with a mean of (2.15) and a standard deviation of (0.854).

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The Implications of Corona Pandemic on Quality:

Table (4) shows the means, standard deviations and order for the responses of the study sample individuals towards the implications of corona pandemic on quality in the small and medium sized industrial companies.

Table 4
MEANS AND STANDARD DEVIATIONS FOR THE STUDY SAMPLE INDIVIDUALS TOWARDS THE IMPLICATIONS OF CORONA PANDEMIC ON QUALITY IN THE SMALL AND MEDIUM SIZED COMPANIES

Item number	Item	Mean	SD	Percentage	Degree of agreement	Rank
1	Corona pandemic affected the level of the product's quality	3.08	0.909	41.6	Medium	6
2	Corona pandemic resulted in an increase in the number of customers' complaints regarding the low-quality level	2.1	0.93	42	Low	15
3	Corona pandemic resulted in a lack of ability concerning the sufficient total surveillance on quality	3.6	0.909	72	Medium	2
4	Corona pandemic resulted in not developing and implementing the program of quality management	3.58	1.009	71.6	Medium	3
5	Corona pandemic led to an increase in setbacks in products	2.29	0.946	45.8	Low	14
6	Corona pandemic resulted in a lack of investment in buying devices and equipment related to the processes of investigation and surveillance	3.02	0.957	80.4	Medium	8
7	Corona pandemic resulted in a lack of feedback from customers concerning the quality of the product	3.31	0.972	46.2	High	4
8	Corona pandemic led to performing constant modifications in the production processes to be compatible with the requirements of quality	3.04	0.889	80.8	Medium	7
9	Corona pandemic resulted in a lack of ability to deal with the resulting imbalance to achieve the desired total quality of the product	3.25	1.031	65	Medium	5
10	Corona pandemic led to the inability to determine the targeted cost and the targeted cost based on the desired level of quality by customers.	2.72	0.933	54.4	Medium	9

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11	Corona pandemic resulted in an inability to determine the characteristics of the product according to the customers' needs (size, color, weight ...(	2.31	0.667	46.2	Low	13
12	Corona pandemic led to lack of commitment to the appointment of delivering products to the market	3.98	0.913	79.6	High	1
13	Corona pandemic led to not providing products with sufficient quantities and good quality in markets	2.59	0.76	51.8	Medium	11
14	Corona pandemic resulted in lack of providing the necessary materials to produce high quality products	2.63	0.882	52.6	Medium	10
15	Corona pandemic resulted inability to verify the quality of all the produced products	2.33	0.826	46.6	low	12
	Total index	**2.92**	**0.5**	**%58.40**	Medium	

Table (4) showed that the implications of corona pandemic on quality had a mean of (2.92) and a standard deviation of (0.500), with a percentage of (58.4%) of the total scale. This indicates that the implications of corona pandemic on cost were within the medium range from the perspective of the study sample individuals. The item (12) stating "Corona pandemic led to lack of commitment to the appointment of delivering products to the market" was in the first place with a mean of (3.98) and a standard deviation of (0.913), while the item (2) stating "Corona pandemic resulted in an increase in the number of customers' complaints regarding the low quality level" was in the last place with a mean of (2.10) and a standard deviation of (0.930).

The Implications of Corona Pandemic on the Productivity

Table (5) shows the means, standard deviations and order for the responses of the study sample individuals towards the implications of corona pandemic on productivity in the companies enlisted in Amman stock exchange and the small and medium sized industrial companies.

Table 5
MEANS AND STANDARD DEVIATIONS FOR THE STUDY SAMPLE INDIVIDUALS TOWARDS THE IMPLICATIONS OF CORONA PANDEMIC ON PRODUCTIVITY IN THE SMALL AND MEDIUM SIZED COMPANIES.

Item number	Item	Mean	SD	Percentage	Degree of agreement	Rank
1	Corona pandemic led to not signing long term Conventions with suppliers	2.99	0.835	39.8	Medium	9
2	Corona pandemic resulted in not delivering materials regularly without delay from suppliers	3.01	1.066	60.2	Medium	8
3	Corona pandemic resulted in the insufficient readiness to receive productivity requests and not delivering them in the allocated time	2.73	0.995	54.6	Medium	12

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4	Corona pandemic resulted in a paucity in materials due to the restrictions imposed on import	2.93	1.003	58.6	Medium	11
5	Corona pandemic led to non-continuous work rhythm.	3.68	0.948	69.6	High	2
6	Corona pandemic resulted in increased stressors on employees while working due to the operation ratio and distancing between workers	3.28	0.887	65.6	Medium	3
7	Corona pandemic led to giving inadequate salaries and that reduced productivity	2.58	0.633	35.6	High	14
8	Corona pandemic led to not giving financial incentives that enhance employees to do work effectively.	2.98	0.692	39.6	Medium	10
9	Corona pandemic resulted in a lack of providing the appropriate atmosphere to do the work	2.48	0.919	53.6	Medium	15
10	Corona pandemic resulted in not employing the mental abilities available among employees	2.54	0.66	40.8	Medium	13
11	Corona pandemic led to a lack of providing the means of psychological comfort and professional security	3.81	0.93	52.2	High	1
12	Corona pandemic led to not conducting regular survey studies to determine customers' requirements	3.03	0.784	40.2	Medium	7
13	Corona pandemic led to a decline or cessation of production during the periods of continuous cessation	3.12	1.013	62.4	Medium	6
14	Corona pandemic led to a difficulty in export processes and a decline in sales	3.18	0.947	63.6	Medium	5
15	Corona pandemic resulted in a decline in sales due to transfer from forward sales to cash sales	3.2	0.931	64	Medium	4
	Total index	**2.67**	**0.524**	**%53.40**	Medium	

Table (5) showed that the implications of corona pandemic on productivity had a mean of (2.76) and a standard deviation of (0.524), with a percentage of (53.4%) of the total scale. This indicates that the implications of corona pandemic on cost were within the medium range from the perspective of the study sample individuals. The item (11) stating "Corona pandemic led to a lack of providing the means of psychological comfort and professional security" was in the first place with a mean of (3.81) and a standard deviation of (0.930), while the item (9) stating "Corona pandemic resulted in a lack of providing the appropriate atmosphere to do the work" was in the last place with a mean of (2.48) and a standard deviation of (0.919).

The Results of Testing the Study Hypotheses

The results of testing the first main hypothesis and the sub-hypotheses derived from it.The first main hypothesis and the hypotheses derived from it were tested by t-test in order to determine whether the mean of the sample differs significantly from the mean of the population from which it

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was chosen in addition to finding the difference between the sample mean and the parameter value concerning the used scale. The effect size can be calculated according to the following formula:

The Effect Size = $\frac{T}{\sqrt{n}}$

Where T= the test value, n= sample size. If the effect size is less than (0.20), then the effect size is considered as small, if the effect size value ranged between (0.20- 0.80),the effect size is medium and if the effect size exceeded (0.80), the effect size is high (Lee, Barrett and George, 2015).

The following results were concluded:

Table 6
THE RESULTS OF TESTING THE FIRST MAIN HYPOTHESIS AND THE SUB-HYPOTHESES DERIVED FROM IT

Hypothesis	t-value	Tabulated t	DF	Sig. level	HO result	N	Effect size
$H_{O.1}$	-3.945	-1.960	290	0	Rejected	291	Medium
$H_{O.1.1}$	2.677	1.96	290	0	Rejected	291	Low
$H_{O.1.2}$	-2.680	-1.960	290	0.008	Rejected	291	Low
$H_{O.1.3}$	-10.836	-1.960	290	0	Rejected	291	Medium

Table (6) shows the results of testing the first main hypothesis and the sub-hypotheses derived from it ,where the results were as follows:

1. There is a statistically significant impact at ($\alpha \leq 0.05$) for the implications of (covid-19) on the operational performance at a significance level of (0.000), which is less than (0.05) and based on t-value of (-3.945), which is more than the tabulated value (-1.960) inthe opposite direction, and it is considered within the medium degree.
2. There is a statistically significant impact at ($\alpha \leq 0.05$) for the implications of (covid-19) on the cost at a significance level of (0.000), which is less than (0.05) and based on t-value of (2.677), which is more than the tabulated value (-1.960), and this effect is considered within the low degree.
3. There is a statistically significant impact at ($\alpha \leq 0.05$) for the implications of (covid-19) on quality at a significance level of (0.000), which is less than (0.05) and based on t-value of (-2.680), which is more than the tabulated value (-1.960) in the opposite direction and this effect is considered within the low degree .
4. There is a statistically significant impact at ($\alpha \leq 0.05$) for the implications of (covid-19) on productivity at a significance level of (0.000), which is less than (0.05) and based on t-value of (-10.836), which is more than the tabulated value (-1.960) in the opposite direction and this effect is considered within the medium degree .

The Results of Testing the Second Main Hypothesis

The second main hypothesis was subjected to (one-way Anova) test, and the results are shown in table (7).

Table 7
THE MEANS AND STANDARD DEVIATIONS FOR THE IMPACT OF THE IMPLICATIONS OF CORONA PANDEMIC ON OPERATIONAL PERFORMANCE ATTRIBUTED TO THE TYPE OF THE COMPANY

	Company type	Frequency	Mean	SD
The Impact Of The Implications Of Corona Pandemic On Operational Performance	Extraction industry and minerals	7	2.92	0.328

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	The medical and pharmaceutical industries	27	2.57	0.232
	Food and beverage industries	56	2.87	0.363
	Chemical industries	63	2.97	0.461
	Engineering and construction	30	3.15	0.445
	Electronic industries	11	3.17	0.39
	Furniture Industry	11	2.6	0.069
	Glass and ceramics industry	9	2.93	0.216
	Textile and leather industry	37	3	0.455
	Paper and Cardboard Industry	18	3	0.176
	Printing and packaging	22	2.58	0.205

The means in table (7) revealed that there are apparent differences between the estimates of the employees of the financial departments in the industrial companies towards the implications of corona pandemic on the operational performance according to the type of the company. In order to identify the level of statistical significance of the differences regarding the means of the estimates of the study sample individuals, one-way Anova was used. The results are illustrated in table (8).

Table 8
THE RESULTS OF ONE-WAY ANOVA TEST FOR THE SIGNIFICANCE OF DIFFERENCES REGARDING THE IMPLICATIONS OF CORONA PANDEMIC ON OPERATIONAL PERFORMANCE ACCORDING TO THE TYPE OF COMPANY.

The implications of corona pandemic on operational performance	**F-value**	**Tabulated t**	**DF**	**Sig. level**
	7.548	1.83	10 280	0

The results in table (8) revealed that there are statistically significant differences at ($\alpha \leq 0.05$) between the mean scores for the responses of the study sample individuals towards the impact of corona pandemic on operational performance attributed to the type of the company, where f-value was (7.548) at a significance level of (0.00) which is less than (0.05). In order to determine the significant differences, Scheffe test for post comparisons was used. The results are illustrated in table (9).

Table 9
THE RESULTS OF SCHEFFE TEST OF POST COMPARISONS FOR THE ESTIMATES OF THE STUDY SAMPLE INDIVIDUALS TOWARDS THE IMPACT OF THE IMPLICATIONS OF CORONA PANDEMIC ON OPERATIONAL PERFORMANCE ACCORDING TO THE TYPE OF THE COMPANY

Company		1	2	3	4	5	6	7	8	9	10	11
1	Extraction industry and minerals	-										
2	The medical and pharmaceutical industries	-0.35	-									

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3	Food and beverage industries	-0.30	0.3	-								
4	Chemical industries	*-0.40	-0.09	-0.09	-							
5	Engineering and construction	*-0.58	-0.27	-0.27	-0.18	-						
6	Electronic industries	*-0.59	-0.29	-0.29	-0.20	-0.02	-					
7	Furniture Industry	-0.03	0.27	0.27	0.37	0.55	0.57	-				
8	Glass and ceramics industry	-0.36	-0.06	-0.06	0.03	0.21	0.23	-0.33	-			
9	Textile and leather industry	-0.43	-0.13	-0.13	-0.03	0.15	0.17	-0.40	-0.07	-		
10	Paper and Cardboard Industry	-0.43	-0.13	-0.13	-0.03	0.15	0.17	-0.40	-0.07	0	-	
11	printing and packaging	-0.01	0.29	0.29	*0.38	*0.56	*0.58	0.02	0.35	0.42	0.42	-

Table (9) revealed that the differences were towards each of (electronic industries, engineering and construction, printing and packaging, chemical industries).

RESULTS AND RECOMMENDATIONS

Results

After reviewing the theoretical framework and analyzing the study data, the results showed that:

1. The level of the implications of corona pandemic on operational performance (cost, quality, productivity) was within the medium level from the perspective of the study sample individuals.
2. The implications of corona pandemic led to increased costs and that affected the competitive advantage and caused difficulty in determining the targeted cost, a decrease in profits, an increase in the costs of purchasing and storing raw materials as well as affording marginal industrial costs.
3. The implications of corona pandemic resulted in a lack of commitment to the appointments of delivering products, inability to provide total surveillance over quality, a lack of developing and implementing the programs of quality management, in addition to the impact on the level of product's quality.
4. The implications of corona pandemic led to setbacks in providing the means to psychological comfort and professional security, imposed more stressors on employees while working, affected the continuity of work, reduced sales, adversely affected exporting process and reduce the levels of productivity during the cessation periods.
5. The implications of corona pandemic affected on the operational performance in a medium degree, affected cost and quality with a low degree and affected productivity with a medium degree.
6. There are differences between the estimates of the employees of the financial departments concerning the implications of corona pandemic on the operational performance according to the type of the company. The most affected companies were (electronic industries, engineering and construction, printing and packaging, chemical industries) as compared to the other companies.

Recommendations

In the light of the results, the researchers recommended the following

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1) The constant work towards increasing the level of operational performance in the small and medium sized industrial companies.
2) Reducing the cost of production to the lowest limits by imposing continuous and good control over all the elements of costs.
3) Maintaining the quality of products due to its importance in sustainability, prosperity, development and satisfaction among all the interested parties, such as employees, consumers and the community as a whole.
4) Improving the level of productivity by providing a suitable work environment, in addition to raising the efficiency of work and providing all the means of psychological comfort and vocational security to employees.
5) The specialized authorities in Jordan should make a continuous review of the decisions procedures and measures that they take concerning the developments of the spread of corona pandemic, such as the duration of quarantine periods due to the effect of that on the operational performance of the industrial companies, particularly the small and medium-sized industrial companies.

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