The Effect of COVID-19 Spread on the E-Commerce Market: The Case of the 5 Largest E-Commerce Companies in the World

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The Effect of COVID-19 Spread on the e-commerce market:
The case of the 5 largest e-commerce companies in the world

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Abstract:

This paper attempts to investigate the effects of the spread of COVID-19 on global e-commerce companies, where the five largest e-commerce companies in the world were chosen in terms of revenues and market value, and they were as follows: American Amazon, Chinese Alibaba, Japanese Rakuten, German Zalando, United kingdom ASOS, has been Measuring the prevalence of corona virus by "cumulative infections" and "cumulative deaths" on a daily basis. Besides, it is measured through the values of both the "new corona virus cases" and the "new corona virus deaths" daily, the dependent variable reflects the response of the global e-commerce market to the impact of the spread of the corona virus and is measured by the daily returns of the shares of e-commerce companies to the global financial markets. This was applied on a daily basis from 15 March 2020 to 25 May 2020.

The results of the descriptive analysis of the returns of the e-commerce companies showed that the companies achieve positive daily returns by calculating the average daily returns. The results of the aggregate model, according to the Beta Standardized Coefficients test, indicate the most important independent variables and an impact on the returns of shares of global electronic trading companies, a variable (total deaths) was the degree of its impact in the first rank, in the second rank a variable (total cases) and in the third variable (new cases).

The percentage of the effect of coronavirus spread varied from one company to another, depending on the country to which it belonged, where the American company Amazon and the United kingdom company ASOS were "the cumulative cases of infection are the most influential and this is consistent with that they are the most affected countries of the coronavirus during the period of research, and the Chinese company Alibaba and Rakuten company Japanese “Corona virus cases” were the most influential in their share price returns, and the German company Zalando was the most influential variable “cumulative deaths”.

Key Words: Coronavirus (COVID- 19), E-Commerce

1. Introduction:

The pandemic of COVID-19, the social dimension and staying at home, has pushed consumers to head to online shopping. This affects the demand and uncertain supply chain issues for the e-commerce industry. COVID-19 can also affect older merchants like Walmart, who are experiencing a drop in

informal shopping, supply chain disruptions, an increase in the purchase of basic toiletries, groceries, and other products.

The term -commerce oris referring to any sort of business transaction, which involves the transfer of information through the internet E commerce means using the transaction and or commercial transaction, which involve exchange of value in return of product or services**(Nakhate and jain,2020).**

The World Trade Organization indicated that it is the right time for e-commerce to save the world economy and that it is to intervene with vigor and vitality and prove e-commerce of its importance and effectiveness in the field of trade and online shopping **(WTO,2020)**.

Shares of traditional trade have become volatile and in marked decline due to the spread of COVID-19, and this will be a strong reason for the willingness of each of these traders of these traditional markets to move towards trade via the Internet in order to preserve the rest of its shares and maintain its commercial field and its success in the market.

The global e-commerce industry report indicated that the impact of COVID-19 on these sectors has been pervasive due to uncertainty in the supply chain and consumer demand worldwide. E-commerce supply chains are mainly stressful. In addition to closing factories in China, the United States and other countries. The most affected part of the industry due to the outbreak of COVID-19 is electronics products as China accounts for most of the cases of COVID-19 and according to the International Federation, the country is the largest producer of electronics and its parts globally. A large amount of China's imports of electronic parts that are assembled into finished products, such as consumer electronic products and computers, are then included. However, due to the factory shutdown, the electronics product supply chain is now close to affecting the e-commerce electronics industry. **(Fernandes,2020)**.

E-commerce in various regions such as America, Europe, Asia and the rest of the world has been affected by the new COVID-19 epidemic. Countries in which most cases were recorded include Italy, Spain, Germany, France in Europe and China in Asia. Chinese company Alibaba, a giant provider of e-commerce services, has struggled to maintain growth rates during the economic slowdown in its domestic market and faced the uncertainty of coronavirus outbreaks. Major companies affected in the

market include Alibaba Group Holding Ltd., Amazon.com, Inc., Qoo10 Pte. Ltd. , JD.com, Walmart Inc. , Shopify, Rakuten Group, and eBay Inc. , And others. For example, Amazon made some huge investment in one-day shipping that has not yet been compensated. In 2019, her net income decreased by 26% and freight costs increased by 46%.

So, this paper attempts to address the following questions:

What is the impact of the spread of the Coronavirus on the volume of E-commerce?

2. Literature Review:

In this section, we try to present some previous literature for this research. About the research that dealt with the impact of the Corona virus and E-commerce**.**

(Hasanat,et al.,2020) aimed to find out the effect of coronavirus (Covid-19) on internet business in Malaysia. . This search has been cleared and the basic search has been done to get a better result. The results showed that since the maximum number of products comes from China and the maximum industries are closed, which means that there is no import and export of the product.

(Nakhate and jain,2020) aimed to find effect of coronavirus on e commerce. . Most of the kits are manufactured in China and hence, dependability is remarkable. With effect of coronavirus, all the shipments processes are hindered which lowered the e commerce growth of country and state. The research paper here comprises of the impact of the corona virus on the online business of India. On the analysing, it has found that online businesses are seriously hampered due to this pandemic disease.

(Alber, 2020) aimed to verify the effects of the spread of the COVID -19 on stock markets.As the prevalence of coronavirus was measured with cumulative cases, new cases, cumulative deaths, and new deaths. The researcher relied on the application on the worst 6 countries (according to the number of cumulative cases), during the period from March 1, 2020 to April 10, 2020. The prevalence of coronavirus was measured in numbers per

million of the population, while the stock market measured the return Δ in the stock market index. The researcher concluded that the return on the stock market seems to be more sensitive to COVID -19 cases than deaths, and to cumulative indicators of coronavir virus more than the new indicators. Besides, the durability check confirms the negative impact of the spread of the COVID -19 on the stock market returns of China, France, Germany and Spain, while these effects have not been confirmed for Italy and the United States.

(Pandey and Parmar,2019) aimed To investigate the factors affecting consumer's online shopping behavior.The study results suggest that consumers'online shopping behavior is being affected by several factors like demographic factors, social factors, consumer online shopping experience, knowledge of using internet and computer, website design, social media, situational factors, facilitating conditions, product characteristics, sales promotional scheme, payment option, delivery of goods and after sales services plays an important role in online shopping.

(Elsayed and Elrhim,2020) aimed to investigating the effects of the prevalence of COVID-19 on sectoral indices of the Egyptian Stock Exchange, during the period from March 1, 2020 to May 10, 2020. Of the cumulative cases of corona virus. The coefficient of determination between the independent variables and the variable that belongs to 4 sectors is (information technology and media and communications services 0.393, industrial goods and services and cars 0.470 and health care and medicines 0.327 and basic resources 0.266).

(Ayittey, at al.2020) estimate that, without urgent global actions to curtail the Wuhan 2019-nCoV within the shortest possible time, China is expected to lose up to $62 billion21 in the first quarter of the year, while the world is likely to lose over $280 billion within the same period.15 This conclusion compares closely to the World Banks estimation that even a weaker flu pandemic, such as the2009 H1N1 viruses, could still wipe 0.5% off global GDP, which amounts to approximately $300 billion.

- **Comparing with literature, it's important to pinpoint that:**

1. This is the first study dealing with the impact of the spread of the Corona virus on the volume of E-commerce and applying it to the 5 largest companies in E-commerce in the world In terms of revenue and market value.
2. Most of the previous studies deal with the economic effects of the COVID-19 epidemic, while this study studies its effects on the global e-commerce market.

- The researchers chose the largest e-commerce companies in the world in terms of revenues and market value. These companies, which provide the majority of their businesses on the Internet, are limited with annual revenues exceeding $ 1 billion.

Table (1): The revenues and market value of these companies were as follows:

Sorted by revenue	company	Headquarters	Revenue (billion USD)	Fiscal year	Number of Employees	Market value (billion USD)
1	Amazon	Washington, America	107	2017	268,900	329.7
2	Alibaba	Zhejiang, China	12.29	2017	26,000	204.8
3	Rakuten	Tokyo, Japan	6.3	2017	12,981	13.06
4	Zalando	Berlin Germany	3.28	2017	10,000	8.7
5	ASOS	London, UK	1.4	2017	7,500	4.8

Source :https://finance.yahoo.com/

In light of the repercussions of Corona's misdemeanor, these companies have shown expectations of their expected revenues in the coming years, as follows:

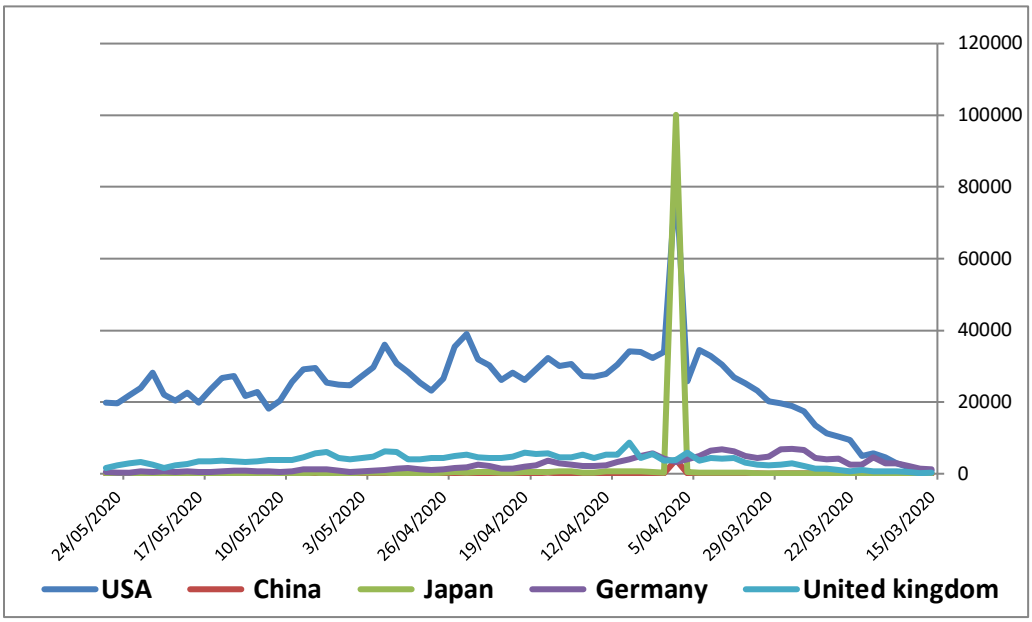
Table (2): Expectations of future revenues for e-commerce companies

company	Headquarters	2020	2021	2022	2023
Amazon	USA	330,711	386,746	448,115	505,786
Alibaba	China	519,372	671,065	834,509	1,046,942
Rakuten	Japan	1,423,889	1,616,054	2,016,036	2,497,850
Zalando	Germany	7,633	8,905	10,033	11,109
ASOS	United kingdom	31	36	41	46

Source:https://markets.businessinsider.com/stocks

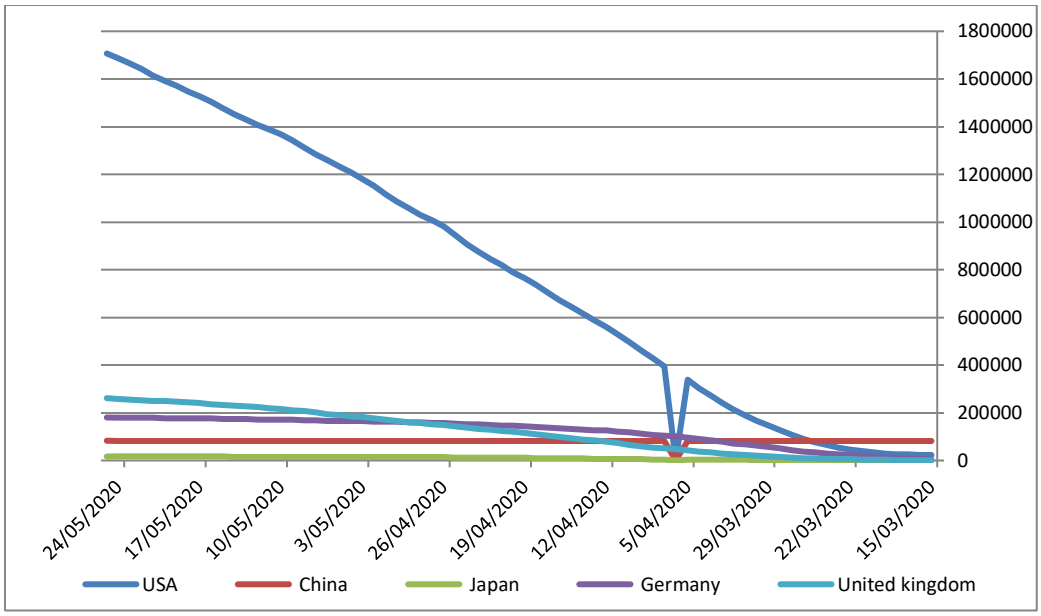
Figures (1) to (4) illustrate the developments of Coronavirus spread during the research period, as follows:

Figure 1: The New cases In the countries associated with the research



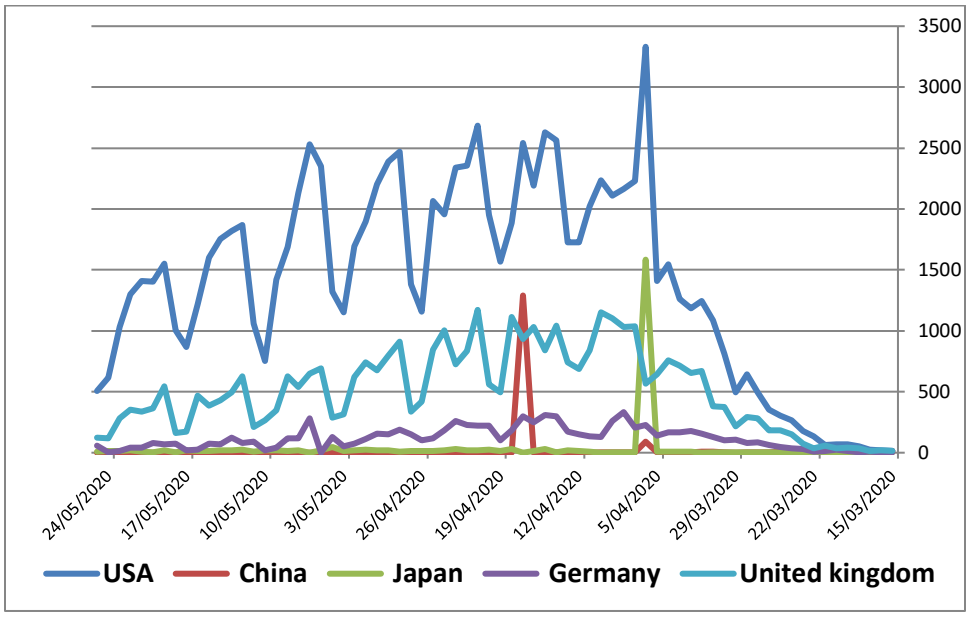
Source: https://www.worldometers.info/coronavirus

Figure 2: The Total cases In the countries associated with the research



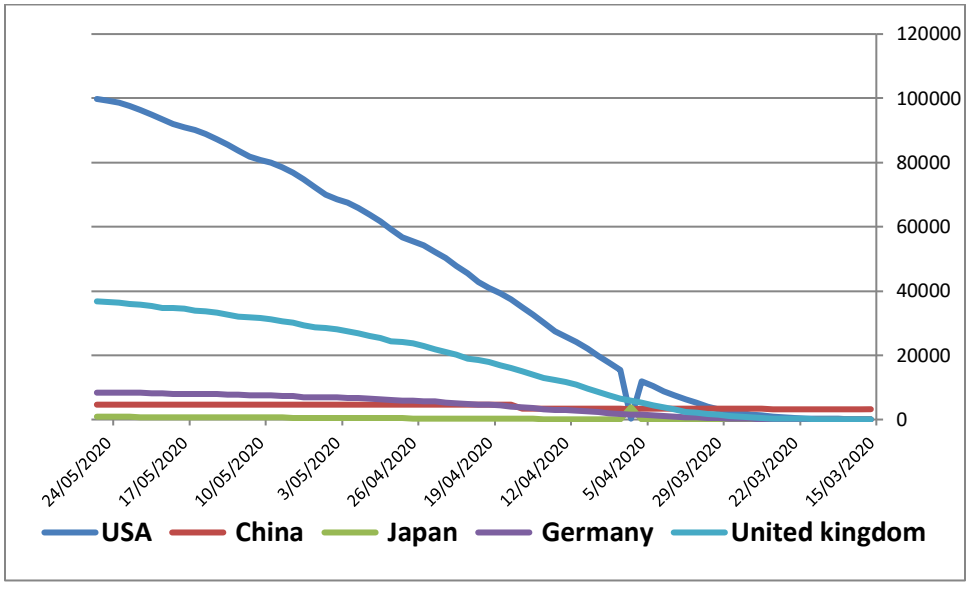
Source: https://www.worldometers.info/coronavirus

Figure 3: The New deaths In the countries associated with the research



Source: https://www.worldometers.info/coronavirus

Figure 4: The Total deaths In the countries associated with the research



Source: https://www.worldometers.info/coronavirus

3. Descriptive and diagnostic statistics:

The following tables illustrate the descriptive statistics of the research variables related to the returns of shares of five global e-commerce companies, and the four independent variables of the incidence of Corona virus, during the period from March 15, 2020 to May 25, 2020 as follows:

Table (3): Descriptive statistics of dependent search variables:

Variables	N	Mean	Median	Minimum	Maximum	Std. Deviation	Skewness	Kurtosis
Amazon	49	0.0078	.00800	-.076-	0.07	0.026367	-.198-	1.399
Alibaba	49	0.0030	.00700	-.059-	0.057	0.024371	-.084-	0.105
Rakuten	49	0.0080	.00600	-.050-	0.079	0.027744	0.331	0.474
Zalando	49	0.0134	.01100	-.074-	0.124	0.03925	0.666	1.644
ASOS	49	0.0135	.01900	-.347-	0.34	0.099722	0.078	5.372

* Source: Data processing output using SPSS v.25.

Table (4): Descriptive statistics of independent search variables:

Variables		N	Mean	Median	Minimum	Maximum	Std. Deviation	Skewness	Kurtosis
USA	new cases	72	24355.49	25638.50	847	81740	11268.301	1.247	8.866
	total cases	72	781083.17	777485.50	0	1706964	565047.962	.067	-1.413
	new deaths	72	1410.64	1416.50	15	3331	820.800	-.141	-.826
	total deaths	72	43645.50	41877.00	73	99798	35310.674	.138	-1.494
China	new cases	72	82.56	13.50	0	3906	459.049	8.370	70.633
	total cases	72	81131.39	82741.00	7	82985	9723.030	-8.411	71.146
	new deaths	72	21.21	.00	0	1290	152.040	8.419	71.203
	total deaths	72	4021.64	4632.00	3213	4634	669.775	-.176	-2.019
Japan	new cases	72	1606.22	169.00	0	100123	11775.550	8.481	71.956
	total cases	72	9350.86	10966.00	226	16581	6174.257	-.235	-1.657
	new deaths	72	33.13	11.00	0	1584	185.601	8.450	71.588
	total deaths	72	378.78	272.00	24	3802	493.077	4.831	32.640
Germany	new cases	72	2447.08	1944.00	273	6933	1907.334	.892	-.269
	total cases	72	120496.25	144733.00	4599	180328	57957.761	-.796	-.816
	new deaths	72	116.93	106.00	0	333	87.470	.630	-.401
	total deaths	72	4231.07	4590.00	9	8371	3111.085	-.106	-1.604
United kingdom	new cases	72	3640.04	3909.50	152	8681	1711.489	-.157	.088
	total cases	72	118993.76	117142.00	1140	261598	89552.931	.111	-1.455
	new deaths	72	512.31	496.00	15	1172	332.206	.241	-.971
	total deaths	72	17388.54	18243.00	28	36793	13321.011	-.011	-1.574

* Source: Data processing output using SPSS v.25.

4. Measuring Variables and Developing Hypotheses :

Corona virus spread measured by independent variables, cumulative infections and cumulative deaths on a daily basis. Besides, it is measured through the values of both the new Corona virus cases and the new Corona virus deaths "daily. The dependent variable reflects the response of the global e-commerce market to the impact of the spread of the Corona virus and is measured by the daily returns of the shares of e-commerce companies to the global financial markets. This has been applied. On a daily basis from 15 March 2020 to 25 May 2020.

This paper aims to test the following hypotheses:

The first hypothesis: "There is no significant, statistically significant effect of the independent variables of the spread of the Coronavirus, which are new cases of Coronavirus, new Coronavirus deaths, cumulative infections and cumulative deaths on the returns of global e-commerce companies.

The second hypothesis: "There is no significant, statistically significant effect of the independent variables of the spread of the Coronavirus, which are the cases of the new Coronavirus, new Coronavirus deaths, cumulative infections and cumulative deaths on the returns of e-commerce companies depending on the country to which they belong.

This means that alternative hypothesis

Ha: β # 0 versus null hypothesis

Hb: β = 0,

where β is the regression coefficient of the following functions:

- Corporate returns = $\alpha + \beta 1$(new cases) + $\beta 2$ (total cases) + $\beta 1$ (new deaths) + $\beta 2$ (total deaths) + ε

5. Testing Hypotheses:

Test First hypothesis: a multiple multiple regression equation was applied to the four independent variables related to the spread of the Corona virus and the dependent variable was the returns of the e-commerce companies in question. **The results were as follows**:

Table (5): Summary of multiple regression tables, the impact of covid-19 on global e-commerce companies

	Dependent Variable	Model Summary		ANOVA		Variables Independent	Effect of variables	Coefficients of independent variables			
								Unstandardized	Standardized	t	Sig.
		R	R Square	F	Sig.			B	Beta		
1	companies returns	.702	.492	58.151	.000	(Constant)		390.9430		5.917	.000
						new cases	3	0.0163	0.213	2.211	.028
						total cases	2	0.0170	7.327	9.771	.000
						new deaths	0	0.1399	0.103	.886	.377
						total deaths	1	0.2922	7.486	10.404	.000

* Source: Data processing output using SPSS v.25.

To explain the results of Table (5), we note the following: -

From Model Summary, the correlation coefficient (R) reached (.702) and the determination coefficient equals (.492), and from ANOVA it turns out that the regression model was significant because the calculated value of (F) was (58.151) and it is statistically significant as shown by the value of sig) Where it reached (000.) which is less than the level of significance (0.05), indicating the significance of the regression model, and therefore we reject the null or null hypothesis and accept the alternative hypothesis.

The results of the statistically significant mean for the independent variables identified and affecting the dependent variable were significant according to (T) test at the level of significance (0.05), where all the independent variables were less than the level of significance (0.05), except for the independent variable (new deaths) did not have an effect Morale where the level of morale for him reached .377)) according to the test (T)

- The results of (Beta Standardized Coefficients) for the most important independent variables and influences in the variable variable, total deaths, were the degree of its effect and importance in the first rank, in the second rank variable (total cases) and in the third rank variable (new cases).

The multiple regression equation was as follows:

companies returns = 390.94 + 0.0163 (new cases) + 0.0170 (total cases) + 0.2922 (total deaths).

Test The second hypothesis: Multiple regression equations were applied to each of the selected companies according to the country to which they belonged, and the independent variables were cumulative infection cases, cumulative deaths, new Corona virus cases, new Corona virus deaths "daily, and the dependent variable, daily returns for the shares of e-commerce companies. For financial markets, the results are as follows:

Table (6): Summary of multiple regression tables, the impact of covid-19 on global e-commerce companies according to the headquarters country.

	Dependent Variable	Model Summary		ANOVA		Variables Independent	Effect of variables	Coefficients of independent variables			
								Unstandardized	Standardized	t	Sig.
		R	R Square	F	Sig.			B	Beta		
1	**Amazon**	0.967	0.936	160.95	0.00	(Constant)		1797.158		75.419	.000
						new cases	4	.003	.198	2.634	.012
						total cases	1	.001	2.204	5.448	.000
						new deaths	3	.076	.313	3.145	.003
	USA					total deaths	2	.017	1.678	4.367	.000
2	**Alibaba**	.642	0.413	7.72	.000	(Constant)		352.321		2.595	.013
						new cases	1	.142	7.835	3.983	.000
						total cases	2	.007	7.604	3.876	.000
						new deaths	3	.044	.811	4.186	.000
	China					total deaths	0	.004	.222	1.699	.096
3	**Rakuten**	.892	0.795	42.73	.000	(Constant)		7.161		71.973	.000
						new cases	1	.000	4.956	2.039	.047
						total cases	2	.000	1.398	6.086	.000
						new deaths	0	.011	2.948	1.172	.247
	Japan					total deaths	0	.003	1.782	1.933	.060
4	**Zalando**	.976	0.953	220.71	.000	(Constant)		31.041		28.822	.000
						new cases	0	.000	.030	.565	.575
						total cases	2	.000	.395	2.405	.020
						new deaths	0	.006	.057	.928	.359
	Germany					total deaths	1	.002	.646	4.157	.000
5	**ASOS**	.950	0.902	100.78	.000	(Constant)		1055.178		12.861	.000
						new cases	0	.014	.043	.433	.667
						total cases	1	.035	3.148	2.492	.017
						new deaths	0	.333	.189	1.992	.053
	United kingdom					total deaths	0	.164	2.387	1.948	.058

* Source: Data processing output using SPSS v.25.

For the interpretation of the results of Table (6), we note the following: -

1- The results of the multiple regression for the summary of the multiple regression model for all e-commerce companies were as follows:

Amazon USA: Correlation coefficient (0.967) and coefficient (0.936).

- Alibaba Chinese company: The correlation coefficient (.642) and the determination coefficient (0.413).
- The Japanese Rakuten Company: The correlation coefficient (.892) and the determination coefficient (0.795).
- German company Zalando: The correlation coefficient (976) and the determination coefficient (0.953).

United kingdom ASOS company: The correlation coefficient (950) and the determination coefficient (0.902).

2- The results of the statistical significance of the multiple regression models for all company countries were significant according to (F) test at the level of significance (0.05), where all models were less than the level of significance (0.05) indicating the significance of the regression models.

3- The results of the statistical significance of the independent variables affecting the dependent variable were significant according to the test (T), where the total variable for all companies was less than the level of significance (0.05), and the degree of no significant effect of the other independent variables differed from one company to another.

4- The results of (Beta Standardized Coefficients) were the most important and influential independent variables in the dependent variable, as the effect of the effect of coronavirus spread varied from one company to another, depending on the country to which they belong, where the American company Amazon and the United kingdom company ASOS were "cumulative cases of infection" They are the most influential and this is consistent with the fact that they are the countries most affected by the coronavirus during the period of research, and the Chinese company Alibaba and the Japanese company Rakuten were the "new cases of the Corona virus" the most influencing the returns of their stock prices, and the German company Zalando was the most influential variable is "cumulative deaths".

6. Summary and Concluded Remarks:

This paper aimed to verify the effects of the spread of the Corona virus on global e-commerce companies. Prevalence of coronavirus was measured with cumulative cases, new cases, cumulative deaths, and new deaths. On a daily basis from March 15, 2020 to May 25, 2020. This was applied to the five largest e-commerce companies in the world in terms of revenue and market value, while e-commerce companies are measured by the daily returns of shares traded in global financial markets. Most of the previous studies deal with the economic effects of the COVID-19 epidemic, while this study studies its effects on the global e-commerce market.

The results indicate that the global e-commerce market is affected by the spread of the coronavirus and the independent variables were the most important and influencing the returns of the shares of global e-commerce companies, the variable (total deaths) was the degree of its impact in the first rank, and in the second rank a variable (total cases) and in the third rank Variable (new cases).

The percentage of the effect of coronavirus spread varied from one company to another, depending on the country to which it belonged, where the American company Amazon and the United kingdom company ASOS were "the cumulative cases of infection are the most influential and this is consistent with that they are the most affected countries of the coronavirus during the period of research, and the Chinese company Alibaba and Rakuten company Japanese “Corona virus cases” were the most influential in their share price returns, and the German company Zalando was the most influential variable “cumulative deaths”.

7. References:

Alber, N. (2020). The Effect of Coronavirus Spread on Stock Markets: The Case of the Worst 6 Countries. Available at SSRN 3578080.

Ayittey, F. K., Ayittey, M. K., Chiwero, N. B., Kamasah, J. S., & Dzuvor, C. (2020). Economic impacts of Wuhan 2019-nCoV on China and the world. Journal of Medical Virology.

Coronavirus, O. E. C. D. (2020). The World Economy at Risk. OECD Economic Outlook, Interim Report March.

Elsayed, A., & Elrhim, M. A. (2020). The Effect Of COVID-19 Spread On Egyptian Stock Market Sectors. Available at SSRN 3608734.

Fernandes, N. (2020). Economic effects of coronavirus outbreak (COVID-19) on the world economy. Available at SSRN 3557504.

Hasanat, M. W., Hoque, A., Shikha, F. A., Anwar, M., Hamid, A. B. A., & Tat, H. H. (2020). The Impact of Coronavirus (Covid-19) on E-Business in Malaysia. Asian Journal of Multidisciplinary Studies, 3(1), 85-90.

Nakhate, S. B., & Jain, N. (2020).The Effect of Coronavirus on E Commerce. Studies in Indian Place Names, 40(68), 516-518.

Pandey, A., &Parmar, J. (2019).Factors Affecting Consumer's Online Shopping Buying Behavior. In Proceedings of 10th International Conference on Digital Strategies for Organizational Success.

https://finance.yahoo.com/

https://markets.businessinsider.com/stocks

https://www.worldometers.info/coronavirus/country/egypt/

https://www.wto.org/

https://www.digitalcommerce360.com/

https://www.wto.org/english/news_e/news20_e/rese_04may20_e.htm