

**TRADE DEFICIT AND THE COVID-19 PANDEMIC IN 2020:  
EVIDENCE FROM NIGERIA****Jimoh Olakunle SAKA<sup>1</sup>****Abstract**

In this paper, the relationship between trade deficit and Corona Virus pandemic is examined using daily data spanning the period February-December, 2020. COVID-19 related variables employed are number of confirmed cases, number of discharged cases, total death cases and tested cases. To control for omitted variable bias, the paper considers inclusion of some economic variables such as exchange rate, inflation rate and interest rate. Using the S-estimation of the Robust Least Square, it is found that total death cases and test cases trigger more trade deficit. Increase in the number of discharged cases necessarily reduces trade deficit due to more active labour force. Depreciation of the naira triggers trade deficit due to short fall in supply and rising costs of importation. Hence, Nigeria should focus more on domestic production, increasing financing of small and medium scale enterprises alongside with adhering to COVID-19 protocol to further boost trade and economic growth.

**Keywords:** Trade deficit, COVID-19 pandemic, Robust Least Squares

**1. Introduction**

End of 2019 witnessed the outbreak of the Novel Corona virus pandemic and has since then been spreading across the globe most of which possess economic strength across the globe. The difference between the new pandemic and previous ones such as Severe Acute Respiratory Syndrome (SAARS) and Middle East Respiratory Syndrome (MERS) and the avian flu has been identified. While the SAARS, MERS and avian flu resulted in food shortages in affected regions with damage to livestock sectors, the COVID-19 within the shortest possible time has created the greatest health and economic challenges.

From January to end of June 2020, reportedly 188 countries have had the cases of COVID-19 with varying magnitudes. By December 27, 2020, the global cumulative number of over 79 million was reported with over 1.7 million deaths since the pandemic began (WHO). COVID-19 was reported to have spread to Africa in February 2020 with Egypt having the first confirmed case and in sub-Saharan Africa; the first confirmed case was announced in Nigeria by end of February 2020.

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Up till December 27, 2020, the total confirmed COVID-19 cases in Africa were 2,644,112 with 62,366 deaths translating to fatality case of 2.4% (NCDC). Since the start of the pandemic, Nigeria cumulatively recorded 1,254 deaths with discharge cases of 2,731 as at December 27, 2020.

On the economic challenges, at the early stage of the spread, the disruption of the supply side manufacturing mainly generated financial impact of the disease. The widespread in the disease initiated various containment measures globally including imposition of movement restrictions with huge economic impact. The protectionate measures and trade restrictions have increasingly distorted global trade. In many developing and even the least developing countries (LDCs), export bans have been put in place to mitigate food price inflation and create reservation for staple food items. Since the beginning of the pandemic, Kyrgyzstan, North Macedonia, Ukraine, Thailand, and Egypt placed export prohibitions on various food and agricultural products (WTO). Meanwhile, Russia, the largest exporter of wheat globally and Vietnam, the third largest rice export, similarly came up with export-restrictive measures. Nigeria's trade balance statistics has shown an apparent trade deficit in most part between January to December 2020 attributed to the restrictions in trade due to COVID-19. The months of March through September 2020 were characterized by trade deficit consistently with the month of August having the largest absolute trade deficit value of N2256.44 billion owing to the increasing number of cases which facilitated high protectionate measures and trade restrictions. In absolute term, January recorded N568.751billion trade deficits; which was informed by the non-existence of the pandemic around this period. On the whole, Nigeria recorded a trade deficit of N7.37 trillion in 2020 based on declines in crude oil exports, solid minerals and manufactured goods. Nigeria's cumulative merchandised trade stood at N8.3 trillion translating to c23% of the nominal GDP during the first quarter of 2020. The total import read c51% of total trade while export recorded c49% of total trade. During the period the total trade deficit was put at N138.98 billion due to COVID-19 negative influence on import and export levels compared to N579.06 billion during the fourth quarter of 2019 which resulted from rapid increase in import level. This clearly indicates two consecutive quarters of import being greater than export. Crude oil, Nigeria's major export constituted 72% of the entire exports and accounted for 2.94 trillion of the total export value of 4.08 trillion. Cumulatively, oil products constituted c.85% of the total exports of Nigeria around the first quarter. The share of agriculture to total exports was put at 3% with share of manufacturing to total exports reaching 10.89% compared to the corresponding quarter of 2019. Nigeria exports mainly manufactured products to other African countries with vessels and other floating structures exported to Cameroun worth of N300.66 billion, Equatorial Guinea at N57.94billion and Ghana at N4.86billion while helicopters of N33.23billion served as exports to Ghana during same period. Generally, the COVID-19 remains a simultaneous demand and supply shocks leading to global recession and enormous decline in global trade including Nigeria. The decline in this case is far larger compared to the one experienced during the global recession of 2008-2009 often referred to as global trade collapse or any of SARS, Ebola or MERS. The pandemic has successfully created a market failure

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leading to a declining growth prospects. The demand and supply chain disruption arising from COVID-19 which halt trade interaction and thereby shrinking revenue inflows to countries of the world including Nigeria which mainly focused on revenue from crude oil exports calls for concern and hence providing the motivation for the study. Consequently, the objectives of this study are to evaluate the effect of COVID-19 pandemic and economic instability due to the pandemic on trade flows.

## **2. Theoretical Idea**

Effect of the ongoing COVID-19 pandemic on trade can be observed through three different channels; an effect on supply, a rise in trade cost and an effect on demand (Bekkers, E., Keck, A., Koopman, R. & Nee, C. (2020). A supply effect of pandemic results from the breakdown of trade linkages thus interrupting the flow of intermediate inputs in production (Jonung& Werner, 2006) in addition to the fact that supply is also hindered by a general labour supply reduction. The effect on supply due to general reduction in labour supply partially occurs due to fear of infections and thus making healthy labour refrain from work place (Jonung& Werner, 2006). Similarly, sickness also reduces labour supply and invariably some proportion may die from the epidemic and further reducing labour supply (Bekkers et al., 2020). The loss of work force was mostly significant during the Spanish flu based on the high mortality of young working ages (Boissay&Rungcharoenkitkul, 2020).

The increasing border controls and restriction on business and personal travels due to the spread of pandemic ultimately gives rise to trade costs. Trade costs involve transportation costs, policy barriers, legal and regulatory costs (Anderson & Wincoop, 2004). Due to the ongoing COVID-19 pandemic, travel restrictions have been imposed on nearly a daily basis and thus ultimately affected transportation costs. Among other things, the price of air cargo has been on the increase subsequently (Bekkers et al., 2020). Jacks, D. S., Christopher M. M., & Dennis N. (2008) and Estevadeordal, A., Brian F., & Taylor, A.M. (2003) in their studies of global trade since the 1870s saw much of the trade bursts arising from increasing trade costs in the interwar period with no mention of the Spanish flu. According to Estevadeordal et al. (2003), rising trade costs after World War I is explained by increased protectionism.

The fear of coming in contact with the virus when consumption goods are to be purchased can give rise to the demand effect of pandemic due to loss in income of household from reduced labour supply. With this, there is reduction in consumption and hence a demand effect (Eichenbaum et al., 2020). Besides, the fear of contacting the virus has a negative impact on various forms of transport, community, social and personal services (Jonung& Werner, 2006). This apart, the anticipation that financial market may be affected negatively can increase the negative effect envisaged on demand. During the SARS epidemic, the psychological effect was more prominent as it had a smaller effect on supply but a stronger effect on consumption (Jonung & Werner, 2006).

The negative effects of demand and supply are more pronounced in sectors worst hit by the containment measures (Jonung & Werner, 2006). As with COVID-19, social distancing measures existed during the time of Spanish influenza pandemic. With interventions varying in considerable amount, economic activity did not stop (Boissay & Rungcharoenkitkul, 2020). The supply effect complemented by demand effect following a pandemic attack causes prolong economic downturn (Eichenbaum et al., 2020) which invariably lead to slow growth and subsequently recession.

The impacts of COVID-19 on the global economy are seen as being complex and thus have undergone some empirical strategies. Formal economic models have been used in the analysis of previous pandemics (For example, Bloom, E., V. de Wit, & Carangal-San Jose M. J. (2005)). In most cases, the complexity of the situation warranted the application of Computable General Equilibrium (CGE) modeling frameworks. Maliszewska, Mattoo, & Van Der Mensbrugghe (2020) applied the CGE model into accounting for the direct impact of reduction in employment, increasing costs of international transactions, significant decline in trade and demand for services. The conclusion was that effect on the global economy is dependent on the severity of the pandemic and duration during which the containment measures last considering the adverse effects especially on developing economies. Effects of pandemic on trade flows have also been analyzed using the conventional gravity model of trade. For example, examine the question: Did the 1918 influenza pandemic affect trade? Using the gravity model with conditional fixed effect poisson as the estimator, results show that the effect of flu on trade remain mostly insignificant. However, when it is significant, the coefficient of the flue appears negative.

### **3. Theory and Method of Analysis**

The theory employed relates to the supply effect chain channel which is part of the modules incorporated in the disaster impact model of Guan et al (2020). The description begins from the supply side and specifically from the production module. In this case firms rent capital for their production process and employ labour to enhance the processing of natural resources and intermediate inputs emanating from other contemporary firms into finished products. The production technology for a specific firm may be written as:

$$O_m = f(\text{for all } Q, V_i^Q, P_i) \quad (1)$$

There exist a wide range of production function including Leontief, Cob-Douglas and constant elasticity of substitution production function among others with different possibility for firms to substitute one input for another. However, an outbreak of epidemics does not allow for substitution as firms are unstable to do such in the short run due to economic fluctuation, the Leontief production function which does not allow for substitution is employed as demonstrated in equation (2)

$$Q_i = \min(\text{for all } q \frac{V_i^q}{c_i^q}; \frac{qc_i}{d_i}) \tag{2}$$

Where  $c_i^q$  and  $d_i$  are input coefficients defined respectively as

$$c_i^q = \frac{\bar{Q}_i}{\bar{V}_i^q} \quad \text{and} \quad d_i = \frac{\bar{Q}_i}{qc_i} \tag{3}$$

The bar indicates variable value in equilibrium state wherein suppliers use intermediate products and primary inputs to produce goods and services to satisfy consumers demand. The aftermath effect of a disaster is that output declines as a consequence of labour supply constraints. Equation (4) demonstrates the proportion of surviving productive capacity ( $Q_i^L$ ) from the existing constrained productive capacity due to the pandemic shock such as COVID-19.  $\theta^L(t)$  represents the proportion of unavailable labour at time  $t$  during the containment measures.  $1 - \theta^L(t)$  is the available employment at same period.

$$Q_i^L(t) = (1 - \theta_i^L(t)) \cdot \bar{Q}_i \tag{4}$$

Equation (5) shows the proportion of the available productive capacity of labour as a function of the losses from sectoral labour force and employment level in the pre-disaster period. The assumption of input-output relation further ensures that the productive capacity of labour in the respect zone after the disaster  $Q_i^L$  is a linear proportion of the available labour capacity in each period.

$$\theta_i^L(t) = \frac{(L_i - \bar{L}_i(t))}{\bar{L}_i} \tag{5}$$

Firms tend to purchase intermediate products from their supplier in each period. A bottleneck in production activities is therefore created due to insufficient inventory of a firm’s intermediate products. Potentially, the production level that the inventory of the  $q$ th intermediate product can provide is therefore:

$$Q_i^q(t) = \frac{S_i^q(t-1)}{c_i^q} \tag{6}$$

$S_i^q(t-1)$  is the amount of  $q$ th intermediate product in possession of firm  $i$  at the end of  $t-1$ . Hence, with the limitations above, the maximum supply capacity of the firm’s  $i$  above can be stated expressed as in equation (7) and the

actual production capacity of firm  $i$   $Q_i^c(t)$  is a function of its maximum supply capacity and the total orders received by the firm

$$Q_i^{\max}(t) = \min(Q_i^L(t); \text{for all } q, Q^q(t)) \tag{7}$$

$$Q_i^c(t) = \min(Q_i^{\max}(t), D_i(t-1)) \tag{8}$$

$$S_i^{quised}(t) = c_i^q \cdot Q_i^q \cdot Q_i^c(t) \tag{9}$$

Equation (7) is considered and modified to suit the specification of the model employed. Since actual production capacity is hindered due to COVID-19 pandemic, this necessarily determines extent of involvement in trade deficit and surplus. Because concentration is on trade deficit, modification of this equation leads us to equation (10) which is the trade deficit model specification.

$$TD = f(CC, COP, EXR, INF, INT, DC, TC, \varepsilon)$$

$$TD = \lambda_0 + \lambda_1 CC + \lambda_2 COP + \lambda_3 EXR + \lambda_4 INF + \lambda_5 INT + \lambda_6 DC + \lambda_7 TC + \varepsilon \tag{10}$$

Where  $TD$  represents trade deficit (import being greater than export) emanating as a result of short fall in supply capacity,  $CC$  represents number of confirmed cases due to COVID-19,  $DC$  is number of discharge cases,  $TDC$  represents total death cases due to the pandemic and  $TC$  is the number of tested cases. Others which are economic variables are  $COP$  is crude oil prices,  $EXR$  is exchange rate,  $INF$  is inflation rate and  $INT$  represents interest rate. All variables are expressed in natural logarithms and thus are interpreted as elasticities. Inflation and interest rate are incorporated due to their fundamental roles in trade. Domestically, rising inflation increases prices of local goods making them less attractive and hence turning attention to cheaper imports. This essentially has a major role to play in trade deficit. Similarly, higher interest rates tend to lead to a reduction in net export which may also initiate trade deficit. Although, there are many other standard trade determinants, such determinants do not appear on a daily or monthly base. The variables employed so far as explanatory are made appear to appear on a daily basis including the COVID-19 related variables. More over operating with observations in same frequency allows for consistency in estimation outcomes.

$\lambda_0, \lambda_1, \dots, \lambda_7$  represent the elasticities coefficients and  $\varepsilon$  is the residual term independently and randomly distributed.

A rough normality test carried out indicates that the residual term is non-normally distributed as the Jarque–Bera probability reads 0.000. Given this situation, the Ordinary Least Squares (OLS) technique of estimation breaks down. This necessitates the use of other estimation technique. By this, the Robust Least Square (RLS) technique is employed with specific concentration on the S-estimation method.

The RLS is insensitive to outliers and is unaffected by the any violation of the OLS linear model. The break down point of M-Estimators necessitated consideration of scale residuals. The M-Estimates which are the solutions to obtaining the smallest possible dispersion of residuals are therefore proposed. The minimization problem is stated as follows:

$$Min\rho(\varepsilon,(\hat{\alpha}),\dots,\varepsilon_n(\hat{\beta})) \tag{11}$$

With this, OLS can be observed as a special but less robust case of S-estimate. The robust S-estimation essentially minimizes the robust M-Estimate of the residual scale rather than that of the variance of the residuals case.

$$\frac{1}{t} \sum_{i=1}^t \theta \left( \frac{\varepsilon_i}{\rho_\varepsilon} \right) = b \tag{12}$$

In this case  $b$ , a constant, is defined as  $E_\varphi[\theta(\varepsilon)]$ , with  $\varphi$  representing standard normal distribution. The derivation of equation 12 gives equation 13 in which case  $\theta$  is replaced with appropriate weight functions.

$$\frac{1}{t} \sum_{i=1}^t \gamma \left( \frac{\varepsilon_i}{\rho_\varepsilon} \right) = b \tag{13}$$

Data on COVID-19 related variables –number of Confirmed cases, discharged cases, total death cases and tested cases-are collected mainly from WHO COVID-19 Global Health Data. Inflation rate, crude oil prices and interest rate are from trading economics and Central Bank of Nigeria (CBN) and National Bureau of statistics (NBS). Exchange rate data is from Central Bank of Nigeria and UK exchange rate data base. The trade deficit is collected from NBS and PFI Capital Research. Only the trade deficit data is available except for November, on a monthly basis but this is disaggregated into daily statistics considering the number of days in each month. This is to ensure that data appears in same frequency for February-December 2020.

**4. Analysis and Discussion**

Table 1 is a description of the key statistical properties of the variables employed. The number of tested cases appears with the highest mean and median for the period of February to December 2020 and computed based on commencement period. This is informed by the exigency to curb the further spread

of the virus following the widespread across the country as indicated by mean and median of the number of confirmed cases. Hence, more people are tested as part of the containment measures even though it does not come with the highest standard deviation. However, the trade deficit variable is characterized by the highest standard deviation, hence highest spread. This supports the idea of supply and demand chains disruption which necessitates more imports than exports causes a fundamental leakage from the nation. Interest rate demonstrates the lowest mean while exchange rate has the lowest spread during the period. One may link the low standard deviation of the exchange rate to the fact that at the initial level fluctuations were not obvious. Only trade deficit, inflation rate and interest rate have positive skewness coefficient. However, trade deficit has the highest kurtosis coefficient. The J-B test statistics and probability values show that all the variables are non-normally distributed.

**Table 1: Descriptive statistics**

	Mean	Median	Std. Dev	Skewness	Kurtosis	J-B Stat	J-B Prob.	Obs.
<b>TD</b>	5.81	4.29	4.23	2.33	6.66	405.43	0.00	279
<b>CC</b>	9.17	10.66	2.95	-1.85	5.54	253.08	0.00	301
<b>COP</b>	3.58	3.71	0.39	-1.93	6.24	219.49	0.00	207
<b>DC</b>	5.55	9.87	3.37	-1.39	3.80	105.48	0.00	301
<b>DTC</b>	8.45	6.79	2.29	-1.54	3.95	129.90	0.00	299
<b>EXR</b>	5.95	5.94	0.02	-1.11	3.86	61.91	0.00	261
<b>INF</b>	2.59	2.53	0.08	0.72	2.15	35.99	0.00	307
<b>INT</b>	2.51	2.53	0.07	0.30	1.46	35.09	0.00	307
<b>TC</b>	11.87	12.28	1.39	-1.25	4.85	77.52	0.00	192

**Source:** Computed using E-views

**Table 2: Correlation matrix**

Correlation	TD	CC	COP	DC	DTC	EXR	INF	INT	TC
<b>TD</b>	1	0.29	0.15	0.32	0.26	-0.23	0.58	-0.47	0.34
<b>CC</b>		1	0.84	0.99	0.99	-0.27	0.64	-0.83	0.99
<b>COP</b>			1	0.79	0.83	-0.27	0.42	-0.66	0.78
<b>DC</b>				1	0.98	-0.33	0.71	-0.88	0.32
<b>DTC</b>					1	-0.19	0.59	-0.78	0.26
<b>EXR</b>						1	-0.58	0.61	-0.32
<b>INF</b>							1	0.87	0.73
<b>INT</b>								1	-0.88
<b>TC</b>									1

**Source:** Computed using E-views

Correlation matrix on table 2 indicates the coefficient of correlation between the respective variables. However, we are mainly concerned with correlation between trade deficit and each of the given variables. It is shown that all the COVID-19 related variables-number of confirmed cases, discharge cases, total death cases and the number of tested cases are positively correlated with trade deficit. While other variables relate as expected, the discharge cases are expected to negatively relate to trade deficit. This again testifies to the huge dependent nature of the Nigerian economy.



**Table 3: Unit root test**

Variable	Test Equation	Test Method	PP test stat	5% CV	O.I	Decision
<b>TD</b>	Intercept	PP	-16.55	-2.87	I(1)	No unit root
<b>CC</b>	None	PP	-9.45	-1.94	I(1)	No unit root
<b>COP</b>	Intercept	PP	-15.99	-2.89	I(1)	No unit root
<b>DC</b>	Intercept	PP	-3.66	-2.87	I(1)	No unit root
<b>TDC</b>	Intercept	PP	-17.54	-1.94	I(1)	No unit root
<b>EXR</b>	Intercept	PP	-4.21	-2.87	I(0)	No unit root
<b>INF</b>	Intercept	PP	-17.80	-2.87	I(1)	No unit root
<b>INT</b>	Intercept	PP	-17.56	-2.87	I(1)	No unit root
<b>TC</b>	Intercept	PP	-6.28	-2.88	I(0)	No unit root

**Source:** Computed using E-views

Results of the unit root test in table 2 confirm that only exchange rate and treatment cases are integrated in their levels.

**Table 4: Robust Least Squares S-Estimation**

Variable	Coefficient	Std. Error	Z statistics	Probability
<b>TD</b>	17.82	1.58	11.30	0.00
<b>CC</b>	-0.61	0.04	-16.42	0.00
<b>COP</b>	0.33	0.01	22.53	0.00
<b>DC</b>	-0.12	0.02	-5.93	0.00
<b>TDC</b>	0.55	0.03	19.10	0.00
<b>EXR</b>	0.27	0.26	1.03	0.30
<b>INF</b>	-1.14	0.12	-9.43	0.00
<b>INT</b>	-4.71	0.16	-29.29	0.00
<b>TC</b>	0.17	0.03	5.77	0.00
<b>R<sup>2</sup></b>	0.78			
<b>Adj. R<sup>2</sup></b>	0.76			
<b>Mean Dep. Var.</b>	5.33			
<b>S.E of Regression</b>	4.02			
$\chi^2_{HET}$	0.83			
$\chi^2_{SC}$	0.51			

**Source:** Computed using E-views

The relationship between trade deficit and the associated variables is as shown on table 3. Relationship between trade deficit and COVID-19 related variables is mix. The discharged cases expectedly relate negatively and significantly (-0.12) with trade deficit. A 1% increase in discharge cases lead to about 0.1% decline in trade deficit. With the number of discharge cases on the increase, labour productivity and thus output increases. Therefore, increase in supply can facilitate domestic exports and this essentially increases foreign exchange. However, total death cases also relate positively and significantly (0.55) with trade deficit. A 1% increase in death cases leads to about 0.6% increase in trade deficit. A rising death due to COVID-19 is expected to give rise to supply chain disruption as there is a short supply of labour. Similarly, a rising number of tested cases results in a significant increase (0.17) in trade deficit. As tested cases increase and following the rapid spread, there is the likelihood of having infected persons especially for cases with asymptomatic conditions. This subsequently lead to isolation and hence a reduction in supply. Coefficient of

confirmed cases (-0.61) shows that as confirmed cases increases, trade deficit reduces. This may be meaningful under strict compliance with all COVID-19 protocol with no tendency to spread. Otherwise, this necessarily reduces labour supply and hence increases trade deficit. Economic variables-inflation rate (-1.14) and interest rate (-4.71)- show an inverse relationship with the trade deficit. While a rising prices of goods and services is likely to motivate producers, the response of the consumer equally matters particularly for the case where demand for goods and services are elastic. It also expected that a lower interest rate boost productivity and hence reduces trade deficit. Moreover, results show that a 1% increase in exchange rate leads to increase in trade deficit but not significant in the model. Depreciation of the naira particularly due to COVID-19 pandemic increases the spending on importation and tends to create deficit. This is more peculiar to a nation like Nigeria.

The model has a good fit as indicated by the coefficient of determination as about 78% of the variation in trade deficit is explained by the COVID-19 related variables and economic variables.

Results of heteroscedasticity and serial correlation tests carried out as post estimation results show that the hypothesis that variances are equal is not rejected. Similarly, the hypothesis of no serial correlation is also not rejected. However, we took caution on the data to minimize effects of the econometric problem in terms of removing trend to reduce spikes and observing the stationary conditions.

## **5. Conclusion**

This paper examined the relationship between trade deficit and COVID-19 pandemic in Nigeria for the period spanning February-December 2020 using daily data. An upsurge of the pandemic which originated in late 2019 has resulted in a lot of losses ranging from ill health, supply-demand chain disruption, job losses. These have had negative impacts on the economy leading to negative growth of the GDP in two consecutive quarters of the 2020. The containment measures resulted in low inter-trade relationship among nations and worst hit by nations like Nigeria characterized by a mono-product nature. For most part of the year 2020 according to statistics, trade deficit was more pronounced wherein more withdrawal was encountered as against less injection through depending on foreign goods and services at higher costs amidst naira depreciation. The paper adopts the RLS estimation technique with special focus on the S-estimator. Results show that in most part, COVID-19 related variables such as death cases and tested cases triggered trade deficit significantly due to supply-demand chain disruption, low productivity and output and loss of manpower. However, more discharge cases reduce trade deficit. Depreciation increased trade deficit through higher costs of importation. Nigeria therefore needs as a matter of urgency self-dependent ability to produce domestically. Adequate financing for small and medium scale industries should be encouraged coupled with business-friendly investment atmosphere to be able to cope during and in the post-COVID-19 era. Meanwhile, protectionate measures should still be strictly adhered to in order to prevent output losses arising from labour force reduction.

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**Research and Publication Ethics Statement:** All the rules stated in the "Higher Education Institutions Scientific Research and Publication Ethics Directive" were strictly considered at every stage of this research. None of the actions specified under the heading "Actions Against Scientific Research and Publication Ethics" of the directive has not been carried out. During the writing process of this study, the citations were made in accordance with the ethical rules and a bibliography was created. The study was subjected to plagiarism control.

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