

Studying the relationship between exports and economic growth: A case of MENA region

Sam Wilson

Msc, Trade development

Imperial College, London

ABSTRACT

Background: Exports are the fundamental foundation of economic growth since they enable each nation to obtain foreign reserves, which helps it grow and expand more quickly. The relationship between exports and economic growth has proven to be a crucial topic for analysts to research and debate. Classical and neoclassical economists are associated with the theory that trading affects economic progress. As per the 2012 OPEC statement, 58 % of the globe's oil resources and 43 % of the globe's natural gas resources, respectively, were generated in the MENA regions. The region continues to supply 55% of the globe's oil resources from 2008 to 2018.

Aims: The research article's main aim is to assess the relationship between export and economic growth in the MENA region by adopting a quantitative methodology.

Method: The data for a total of 15 countries from the MENA region for the period 2000 to 2020 were considered. Furthermore, two econometric analyses were applied to assess the regression models and the relationship between export and economic growth in the MENA region.

Findings: It was found that the exports, in fact, had a significant impact on the economic growth of the countries of this region. It is therefore recommended for the policymakers to make holistic policies and approaches that will help to boost the exports of the country.

Keywords: *economic Growth, MENA region, exports*

INTRODUCTION

Exports are the fundamental foundation of economic growth since they enable each nation to obtain foreign reserves, which helps it grow and expand more quickly (Bakari & Mabrouki, 2017). A nation with these foreign reserves can purchase the technologies to increase productivity. The welfare levels might also increase due to using foreign products that are either unavailable domestically or costly to create domestically (Sunde, 2017). The relationship between exports and economic growth has proven to be a crucial topic for analysts to research and debate. Classical and neoclassical economists are associated with the theory that trading affects economic progress. Several research studies have examined the impact of trade policies on economic growth.

Furthermore, Canh and Thanh (2022) argue that Gross Domestic Product (GDP) has been identified as among the key factors influencing economic development. According to the theory of "export-led growth," exports are the main route whereby the economic reform might influence the amount of productivity and, subsequently, the development of economic expansion. Export growth could boost production and provide large-scale efficiencies (Huchet-Bourdon & Vijil, 2018).

Ogunjimi and Ogunro (2015) claim that exports resulted in more significant investments, technological development, and import expansions, which helped the MENA region's economic development. Economic development in the Mena region could contribute to additional export enhancement by encouraging the implementation of technologies and raising the number of imports consumed as ingredients for export-oriented operations. The investigation performed by Ahmad and Yang (2018) used Singapore as a case example to investigate the association between exports and economic development during the beginning of the East Asian Revolution. The researcher used a granger causality test for this analysis. The empirical results showed that Singapore's strong emphasis on exporting does not appear to have had an adverse influence on a country's economic expansion, even though there is a long-term unfavourable association between export dependence and economic expansion. This was due to the fact that the rise in the nation's export dependence has been a result of rising productivity rather than its source. In this regard the focus of this analysis has been on assessing the relationship between export and economic growth in the MENA region.

LITERATURE REVIEW

According to the World Bank's 2020 population statistics, which include 21 nations, the MENA region is known to be about 6% of the global populace (McKee & Woertz, 2017). Furthermore, Elhoushy & Lanzini (2021) argue that as per the 2012 OPEC statement, 58 % of the globe's oil resources and 43 % of the globe's natural gas resources, respectively, were generated in the MENA regions. The region continues to supply 55% of the globe's oil resources from 2008 to 2018. MENA is a significant contributor to the world's economic sources because of its huge stocks of petroleum products. For the past four decades, exports have been a critical economic development driver. The World Bank and IMF promoted the benefits of an industrialisation approach focused on exports and the liberalisation of trade (Omri, 2014). However, Tan & Tang (2016) argue that these economies' development is also due to variables that are unique to specific nations and not always relevant for those other nations. In addition, several economists challenged this approach. Several empirical investigations have been performed to determine how exports significantly affect economic growth. Exports help the nation's economic progress, whereas other investigations have concluded that exports help the nation's economy grow and prosper.

Szkorupová (2014) states that export growth is driven by better resource distribution across the cost savings, advancements in production processes brought about by a more extensive understanding and technological foundation, worldwide transnational agreements for technical assistance, the acquisition and emergence of investment, an increase in recruitment rates due to word formation, and ultimately lead to the development of the economy. Furthermore, Sultanuzzaman & Islam (2019) claims that export-led growth addresses the external trade deficits in emerging nations. It also helps economic policymakers determine the scope and rate of the restoration. Omri and Chaibi (2015) adopted the Pooled OLS and Two-Stage Least Squares (2SLS) paradigms to investigate the development of the economy (measured by actual GDP) trend of the MENA geographical area between 1960 and 2000, which includes the nations listed in the MENA regions. The results indicated that physical investment became less effective and that trading liberalisation was less advantageous to the actual GDP expansion.

The MENA area's real GDP growth came from sources other than total Factor Productive Growth (TFPG), the poorest significant component.

Milner (2017) state that the proportion of export costs over import costs is known as the terms of trade (TOT), which measures how much exporting cost in relation to importing. These can be understood as the ratio of imported items to exported goods that a country can acquire. A rise or rise in a nation's TOT often denotes that exporting costs have risen while import costs have probably remained steady or decreased. However, Kibria & Hossain (2020) argue that export prices could have declined but not as dramatically as import costs. Moreover, Trinh (2017) states that the gross domestic product (GDP) is a fiscal indicator of the overall market price of all the finished products and offerings that economies generate over a specified time frame. As per the literature, TOT and GDP are correlated, and as independence rises, so does Real gdp per capita, apart from Chinese, because of its economic and monetary constraints. The exchanging of commodities and resources through global boundaries is referred to as global trade. Haseeb & Hassan (2014) performed their analysis to examine the relationship between exports and economic growth in Malaysia. The investigation's findings do not support the "export-led development" plan. However, they agree with the idea that Malaysia's trade and GDP have a long-term, positively reinforced association.

Moreover, results indicate a one-way short-run causal relationship between GDP and trade but not the other way around. This indicates that Malaysia's rising trades often impact the country's rising production rather than being its source. Furthermore, the export to GDP ratio measures how crucial foreign trading would be to a state's GDP. It is computed by dividing the total cost of foreign trade above a time frame by the same period started GDP. However, being referred to as a proportion, it is typically stated as a percentage (Abdelsalam, 2020). Increased exports as a percentage of GDP boost foreign reserves inflows and lead to greater imports of substantial commodities and offerings, which are both crucial for boosting economic growth (Karam & Zaki, 2015). The term "exports in (USD\$)" referred to tangible items manufactured inside the borders of one nation and exchanged with another nation in US dollars (Yüksel, 2017). Selling these products increases the economic development of the nation that makes them by bringing in foreign exchange profits. Exports in US dollars are crucial to MENA regions since they give residents and businesses access to a wide range of new markets. Countries that export goods in

US dollars typically expand more quickly are innovative, enhance productivity, and give their citizens better incomes and much more potential (Kahia & Charfeddine, 2016).

Mahmoodi (2016) conducted a study to examine relationships between exports and economic growth in the actual context of the Greek GDP, Applying error-correction modelling and multidimensional Granger causality. A sensitive evaluation based on impulsive reflexes is used to verify the outcomes' reliability. The estimate process produces reliable outcomes, showing that the ELGH is invalid for Greece. Moreover, the empirical results indicate a robust and constant relationship between export and economic growth over the longer term. Zahonogo (2016) investigated the influence of terms of trade (trade directions) on economic progress in 12 Sub-Saharan African (SSA) nations between 1963 and 1993. Outcomes from a vectors errors correcting model (VECM) showed that economic development in 10 of the 12 SSA nations is significantly influenced by trade policy, exporting, and investments rate shocks. This shows that an international approach to export development may be used to boost the economies of certain African nations.

Moreover, the outcomes confirm the idea that, in order to boost the economy in the contemporary global economy, African nations must implement trade liberalisation regulations. Sunde (2017) confirmed the research hypotheses by examining the association between exports and economic growth and demonstrating a favourable and substantial association between the two variables from 1973 to 1993. This investigation aims to determine whether there is a causal relationship between the two elements of exports and economic growth as well as its directions. The method they used in their analysis is Granger causality. In accordance with the findings in the empirical studies, one of Mittal's studies demonstrates that trading has a favourable and considerable effect on GDP. The overall GDP per capita grows by almost halfway (0.47) % for every one percent gain in the average trading to Ratio of GDP.

H1=There is a significant relationship between term of trade on GDP of MENA region economies.

H2=There is a significant relationship between export (USD\$) on GDP of MENA region economies.

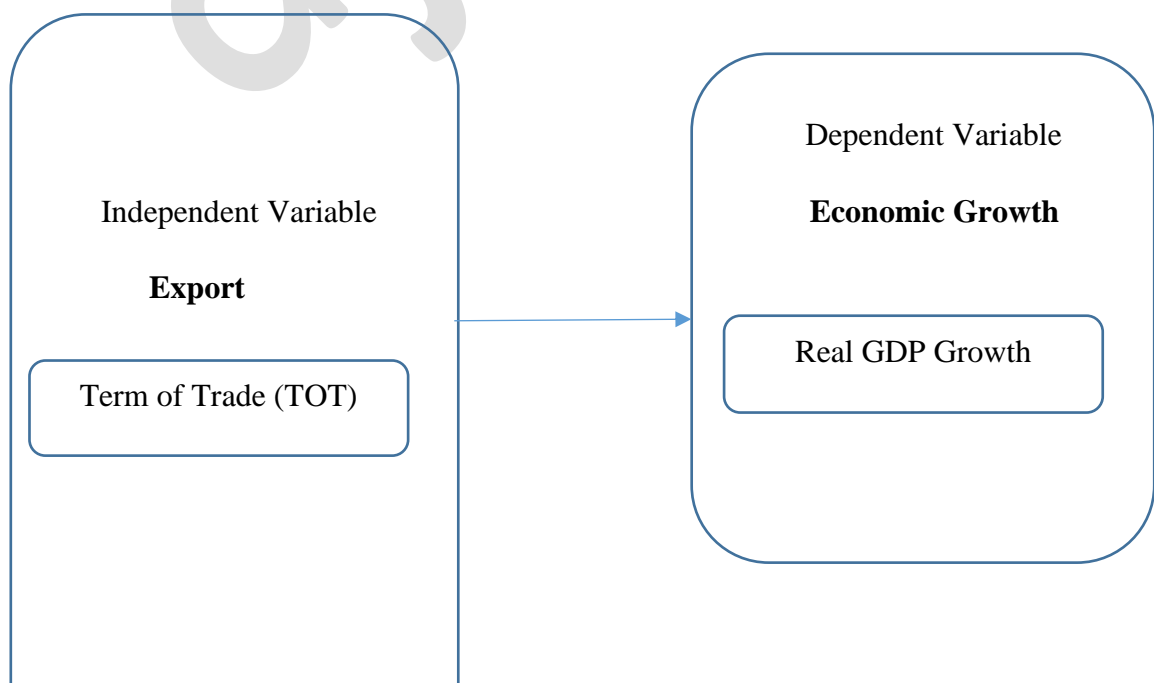
H3= There is a significant relationship between export (% of GDP) on GDP of MENA region economies.

THEORETICAL FRAMEWORK

For dealing with economic growth, there are several theories and frameworks. Several theories were presented for identifying the relationship between export and economic growth in MENA regions (Belloumi, 2014). The researcher in this analysis reviewed the neoclassical theory, which holds that supply and demand determine how products and offerings are produced, consumed, and valued. Furthermore, the Neoclassical Development Theory is an economic theory of expansion that describes how well the interaction of the three economic factors of labour, investment, and technologies leads to a constant pace of economic development. This procedure contributes to the expansion of operational procedures that could also combine discussions and directives in the MENA region's economy to enhance long-term results for nations (Najeb, 2014).

CONCEPTUAL FRAMEWORK

Figure 1 illustrates the parameters used to identify the relationship between the export and economic growth in the MENA region. Furthermore, export has been the investigation independent predictor. This predictor are controlled by a number of factors, including real term GDP growth, Moreover, the investigation dependent predictors is economic growth.



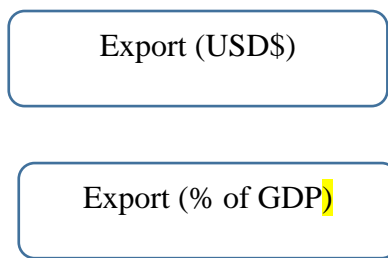


Figure 1: Conceptual Framework

Source: Author

METHODOLOGY

The research article's main aim is to assess the relationship between export and economic growth in the MENA region by adopting a quantitative methodology. Furthermore, the quantitative approach has been used because it allowed the researcher to assess the variables used in the conceptual model of the paper. The following assessment was performed by applying the positivist philosophy, considering the fact that the researcher is using a quantitative investigation. The researcher adopted the deductive approach for analysis since the hypothesis to be examined already been created. This approach works well for identifying the relationship between export and economic growth in the MENA region. The World Bank Developmental Indices databases were used to collect the statistics for this investigation. The data were obtained between 2000 and 2020.

This period was taken into account to gather sufficient information to examine the relationship between export and economic growth in the MENA region. A total of 15 countries from the MENA regions, were under consideration in this analysis. The research depends on secondary information in order to meet the aims of the analysis. The researcher adopted secondary data to obtain the data for the independent parameters and dependent parameters in this research report. Furthermore, two econometric analyses were applied to assess the regression models and the relationship between export and economic growth in the MENA region. In addition, the investigator used Stata to analyse the relationship between the export and economic growth

in the MENA region's economies. Moreover, the investigator used panel regression fixed effect, random effect and GLS estimations. The equation of the regression given below.

$$GDP_{it} = \alpha + \beta_1 TOT_{it} + \beta_2 EXP (USD\$)_{it} + \beta_3 EXP (\% \text{ of GDP})_{it} + \mu_{it}$$

Where GDP taken as a predictor for economic growth, and TOT taken as a predictor of export, this statistical tests were performed to assess the relationship between the independent and dependent variables in the investigation in order to offer reliable conclusions and outcomes. This kind of research is necessary for the analyst to examine the relationships relationship among export and economic development in the MENA region. Secondary information was used because it allowed the researcher to examine the research question whilst remaining confident in the reliability and authenticity of the statistics acquired from World Bank datasets (Haseeb & Hassan, (2014). The independent and dependent predictors was used by the investigator in the present investigation listed below.

$$GDP_{it} = C + \beta_1 TOT_{it} + \beta_2 EXP (USD\$)_{it} + \beta_3 EXP (\% \text{ of GDP})_{it} + \epsilon_{it}$$

C=Constant

GDP=Real GDP Growth

TOT=Term of Trade

EXP (USD\$) = Export in US dollar

EXP (% of GDP) = Export in percentage of GDP

Results

Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
		-		-	
Term of trade	315	8.59E+11	6.88E+12	6.77E+13	1.81E+13
Exports (USD\$)	315	5.31E+10	6.20E+10	3.54E+09	3.99E+11
GDP growth	315	3.43936	10.46939	-62.0759	123.1396

Exports (% of GDP)	315	158	91.07689	1	315
--------------------	-----	-----	----------	---	-----

Descriptive statistics is a type of statistical tool that helps to transform raw data into the form of data that can be interpreted and understood easily (Kaur, Stoltzfus and Yellapu, 2018). It can be seen from the table that there are a total of 315 observations that were collected using 15 countries belonging to the MENA region. The table shows that the mean term of trade is 859 billion US dollars whereas the standard deviation of this value is 6.88 trillion US dollars. The standard deviation shows the amount of dispersion a single data set has. The mean of the term of trade can increase or decrease by 6.88 trillion US dollars. The exports in US dollars for the 15 countries have a mean value of 53.1 billion US dollars whereas this value can be increased or decreased by 62.0 billion dollars which are shown as the standard deviation of the data set. The mean GDP growth of the MENA region is found to be 3.44% whereas this value can be increased or decreased by 10.47%. The variable exports presented as a percentage of GDP has a mean value of 158%. The standard deviation of this variable is 91.08% which means that the mean can be increased or decreased by this value.

Correlation Analysis

	Term of trade	Exports (USD\$)	GDP growth	Exports (% of GDP)
Term of trade	1			
Exports (USD\$)	-0.0119	1		
GDP growth	-0.0019	0.0034	1	
Exports (% of GDP)	0.1078	0.0942	0.1058	1

The correlation analysis is another type of statistical tool that helps the researcher to identify the relationship between the variables that are used in the research. The correlation coefficient will enable the researcher to identify the significance of the relationship along with the strength and direction of the relationship (Senthilnathan, 2019). The threshold for the determination of the significance of the relationship is 0.05. This means that any value lower than 0.05 will indicate that the relationship is significant. Looking at the above table, it can be seen that the coefficient of correlation between the term of trade and Exports (USD\$) is -0.0119

which is less than 0.05. Hence it shows that the relationship is significant but the negative sign shows that both the variables are negatively correlated. The coefficient of correlation between GDP growth and the term of trade is -0.009 which is also less than 0.05 indicating a significant relationship. However, the negative sign indicates a negative association. The correlation coefficient between GDP growth and Exports is 0.0034 which is less than 0.05, hence it indicates that the relationship is significant and the positive sign is an indication of a positive association. Looking at the correlation coefficients between Exports (% of GDP) and other variables such as the term of trade, exports (USD\$), and GDP growth are 0.11, 0.1, and 0.11 respectively. All of these values are greater than 0.05 which shows that the relationships are insignificant.

HAC t- Statistics

HAC t-statistics stands for heteroskedasticity. HAC t-statistics do not only include heteroskedasticity but also include autocorrelation as well. Kim and Sun (2011) have discussed in their study that to test a set of panel data for regression, the data must be tested for the presence of autocorrelation and heteroskedasticity. A suitable regression model can only be selected once the data set is tested for both of these issues. to test the data for the presence of heteroskedasticity, the researchers mainly use the modified Walt Test (Sun, 2013). The null hypothesis of this test states that the data set does not have an issue of heteroskedasticity.

$$\begin{array}{r}
 \text{chi2 -15} = \quad 92781.52 \\
 \text{Prob>chi2} \\
 = \quad 0.000
 \end{array}$$

It can be seen from the above table the value of the modified Walt test is 0.000 which is less than the threshold of 0.05. this indicates that the null hypothesis of the model is to be rejected which indicates that there is an issue of heteroskedasticity in the data.

$$\begin{array}{r}
 \text{F(1 14)} = \quad 1.565 \\
 \text{Prob > F} = \quad 0.2314
 \end{array}$$

After testing the data for heteroskedasticity, the next step is to test the data for autocorrelation. the researcher uses Woolrige test for this purpose. The null hypothesis of the test also states that there is no issue of autocorrelation in the data. However, the above table shows that the value of Woolrige test is 0.2314 which is greater than 0.05. This indicates that

there is not an issue of autocorrelation in the data set. In the light of the study conducted by West (2010) it can be said that wherever there is an issue of either heteroskedasticity or Autocorrelation or both, the researchers cannot apply the OLS regression model. Hence looking at the above results, it can be said that there is an issue of heteroskedasticity which will obligate the researcher to use the GLS regression model.

Regression Model

Regression is the statistical tool that the researcher uses to evaluate whether the independent variables of the model have a significant impact on the dependent variable or not. the threshold value for this test is also 0.05 which means any value below this will indicate a significant impact. For this research, the researcher will use the GLS regression model which has been selected after a series of tests were performed.

GDP Growth	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
					-2.78E-	
Term of trade	-5.68E-14	1.13E-13	-0.5	0.615	13	1.64E-13
Exports (USD\$)					-7.62E-	
	-1.14E-12	3.30E-12	-0.35	0.729	12	5.33E-12
Exports (% of GDP)	0.00841	0.002207	3.81	0.000	0.004084	0.012736
_cons	2.355131	0.407408	5.78	0.000	1.556626	3.153636

The above table shows the regression analysis of the model for this research where the dependent variable is GDP growth. It can be seen that the p-value of the term of trade is 0.615 which is greater than 0.05. This indicates that the impact of the term of trade on GDP growth is insignificant. Similarly, the p-value of exports (USD\$) is 0.729 which is also greater than 0.05. This means that exports (USD\$) also do not have any significant impact on GDP growth. Contrary to both these variables, the p-value of Exports (% of GDP) is 0.000 which is less than 0.05. This suggests that exports (% of GDP) have a significant impact on the GDP growth of the countries in the MENA region.

DISCUSSION

This study is aimed at evaluating the relationship between the economic growth and exports of the countries within the MENA region. The region mostly contains the Middle East as well as

the north African region. Bhattacharya and Wolde (2010) have identified that the main reason to group these countries is that these countries have great reserves of oil and petroleum that enable them to earn high revenues from the export of these petroleum goods. After collecting the data for 15 countries for the years from 2000 to 2020, the researcher conducted a thorough regression analysis of the data. It was found that the exports had a significant impact on the economic growth of the countries of this region. The findings of this study were contrary to the findings of the study conducted by Adeleye, Adeteye and Adewuyi (2015) that aimed to evaluate whether there was a long-run association between exports and the economic growth of Nigeria. The study analysed data for the period 1970 – 2005. This study used cointegration tests, the results of which showed that there was no long-run association between the variables. The contrary results can be because of a number of reasons such as that the researchers had only focused on Nigeria whereas this research was mainly based on the MENA region. More importantly, it can be said that the results of the present study are more reliable because the data that is analysed is from 2000 to 2020 which is more recent.

However, the study conducted by Chimobi (2010) had a similar aim to evaluate the relationship of international trade with the economic growth in Nigeria. The study used similar methods to conduct the research that is, it also used regression analysis to evaluate the impact. The researcher also employed cointegration and error correction models that helped to identify that there was a positive impact of international trade on the economic growth of Nigeria. International trade includes exports as well as imports of the country and thus it can be seen that the findings of this research can be well triangulated with the results of the present study. the main reason was the use of similar methods and the latest data available.

CONCLUSION AND RECOMMENDATION

Based on the findings of this research, it can be concluded that exports have a significant impact on the GDP growth in the MENA region. It is therefore recommended for the policymakers to make holistic policies and approaches that will help to boost the exports of the country. oil export is one of the major characteristics of the countries in this region because they are quite rich in these reserves. But the countries should try to shift their focus from oil exports to other exports as well. Although oil is the major necessity of the world and the demand does not ever stop but in the recent pandemic, it was seen that the demand fell considerably. So it is

recommended that the region should look for non-oil exports as well. moreover, the government should also focus on granting wide access to the technological knowledge base so that research is integrated and technological diffusion becomes easier. The governments should also look for ways to attract foreign investments in the country that would further help in increasing the manufacturing and export of all types of goods.

The first limitation of this research is that the researcher only focussed on the countries in the MENA region however, the changing dynamics of the world have highlighted the importance of exports for all of the countries with regard to economic growth. Moreover, the research does not discuss the impact of COVID-19, however, it has been a major influential factor influencing exports as well as global economic growth.

The main future implication of this research is that future researchers should look for incorporating other countries apart from the MENA region that has an important role in exports in their economic growth. Moreover, the researchers should try to incorporate the factor of COVID 19 and its impact on the exports of the countries. For this purpose, the researcher can obtain data for the pre-COVID phase and then post COVID phase to analyze the impacts.

REFERENCES

- Abdelsalam, M. A. M. (2020). Oil price fluctuations and economic growth: The case of MENA countries. *Review of Economics and Political Science*.
- Adeleye, J.O., Adeteye, O.S. and Adewuyi, M.O., 2015. Impact of international trade on economic growth in Nigeria (1988-2012). *International Journal of Financial Research*, 6(3), pp.163-172.
- Ahmad, F., Draz, M.U. and Yang, S.C., 2018. Causality nexus of exports, FDI and economic growth of the ASEAN5 economies: evidence from panel data analysis. *The Journal of International Trade & Economic Development*, 27(6), pp.685-700.
- Bakari, S., & Mabrouki, M. (2017). Impact of exports and imports on economic growth: new evidence from Panama. *Journal of Smart Economic Growth*, 2(1), 67-79.
- Belloumi, M. (2014). The relationship between trade, FDI and economic growth in Tunisia: An application of the autoregressive distributed lag model. *Economic systems*, 38(2), 269-287.
- Bhattacharya, M.R. and Wolde, H., 2010. Constraintson Growth in the MENA Region. *International Monetary Fund*.
- Canh, N. P., & Thanh, S. D. (2022). The dynamics of export diversification, economic complexity and economic growth cycles: Global evidence. *Foreign Trade Review*, 57(3), 234-260.
- Chimobi, O.P., 2010. The Estimation of Longrun Relationship between Economic Growth, Investment and Export in Nigeria. *International Journal of Business and management*, 5(4), p.215.
- Elhoushy, S., & Lanzini, P. (2021). Factors affecting sustainable consumer behavior in the MENA region: A systematic review. *Journal of International Consumer Marketing*, 33(3), 256-279.

- Haseeb, M., Hartani, N. H., Bakar, A., Azam, M., & Hassan, S. (2014). Exports, foreign direct investment and economic growth: Empirical evidence from Malaysia (1971-2013). *American Journal of Applied Sciences*, 11(6), 1010-1015.
- Huchet-Bourdon, M., Le Mouël, C., & Vijil, M. (2018). The relationship between trade openness and economic growth: Some new insights on the openness measurement issue. *The World Economy*, 41(1), 59-76.
- Kahia, M., Aïssa, M. S. B., & Charfeddine, L. (2016). Impact of renewable and non-renewable energy consumption on economic growth: New evidence from the MENA Net Oil Exporting Countries (NOECs). *Energy*, 116, 102-115.
- Karam, F., & Zaki, C. (2015). Trade volume and economic growth in the MENA region: Goods or services?. *Economic Modelling*, 45, 22-37.
- Kaur, P., Stoltzfus, J. and Yellapu, V., 2018. Descriptive statistics. *International Journal of Academic Medicine*, 4(1), p.60.
- Kibria, M. G., & Hossain, M. S. (2020). Does export affect the Economic growth?: An empirical investigation for Bangladesh. *American Journal of Economics and Business Management*, 3(1), 219-226.
- Kim, M.S. and Sun, Y., 2011. Spatial heteroskedasticity and autocorrelation consistent estimation of covariance matrix. *Journal of Econometrics*, 160(2), pp.349-371.
- Mahmoodi, M., & Mahmoodi, E. (2016). Foreign direct investment, exports and economic growth: evidence from two panels of developing countries. *Economic research-Ekonomska istraživanja*, 29(1), 938-949.
- McKee, M., Keulertz, M., Habibi, N., Mulligan, M., & Woertz, E. (2017). Demographic and economic material factors in the MENA region. *Middle East and North Africa Regional Architecture: Mapping Geopolitical Shifts, Regional Order and Domestic Transformations*. Work. Pap, 3, 43.
- Milner, H. V. (2017). The political economy of international trade. In *Global Trade* (pp. 91-114). Routledge.

- Najeb, M. (2014). A contribution to the theory of economic growth: Old and New. *Journal of Economics and International Finance*, 6(3), 47-61.
- Ogunjimi, O., Aderinto, E., & Ogunro, T. (2015). An empirical analysis on the relationship between non-oil exports and economic growth in Nigeria. *International Journal of Academic Research in Business and Social Sciences*, 5(12), 68-78.
- Omri, A. (2014). The nexus among foreign investment, domestic capital and economic growth: Empirical evidence from the MENA region. *Research in economics*, 68(3), 257-263.
- Omri, A., Daly, S., Rault, C. and Chaibi, A., 2015. Financial development, environmental quality, trade and economic growth: What causes what in MENA countries. *Energy economics*, 48, pp.242-252.
- Senthilnathan, S., 2019. Usefulness of correlation analysis. Available at SSRN 3416918.
- Sultanuzzaman, M. R., Fan, H., Mohamued, E. A., Hossain, M. I., & Islam, M. A. (2019). Effects of export and technology on economic growth: Selected emerging Asian economies. *Economic research-Ekonomska istraživanja*, 32(1), 2515-2531.
- Sun, Y., 2013. A heteroskedasticity and autocorrelation robust F test using an orthonormal series variance estimator. *The Econometrics Journal*, 16(1), pp.1-26.
- Sunde, T. (2017). Foreign direct investment, exports and economic growth: ADRL and causality analysis for South Africa. *Research in International Business and Finance*, 41, 434-444.
- Sunde, T. (2017). Foreign direct investment, exports and economic growth: ADRL and causality analysis for South Africa. *Research in International Business and Finance*, 41, 434-444.
- Szkorupová, Z. (2014). A causal relationship between foreign direct investment, economic growth and export for Slovakia. *Procedia economics and finance*, 15, 123-128.
- Tan, B. W., & Tang, C. F. (2016). Examining the causal linkages among domestic investment, FDI, trade, interest rate and economic growth in ASEAN-5 countries. *International Journal of Economics and Financial Issues*, 6(1), 214-220.

- Trinh, T. H. (2017). A primer on GDP and economic growth. *International Journal of Economic Research*, 14(5), 13-24.
- West, K.D., 2010. Heteroskedasticity and autocorrelation corrections. In *Macroeconometrics and Time Series Analysis* (pp. 135-144). Palgrave Macmillan, London.
- Yüksel, S. (2017). The impacts of research and development expenses on export and economic growth. *International Business and Accounting Research Journal*, 1(1), 1-8.
- Zahonogo, P. (2016). Trade and economic growth in developing countries: Evidence from sub-Saharan Africa. *Journal of African Trade*, 3(1-2), 41-56.