IMPLEMENTATION OF AUTHORIZED ECONOMIC OPERATOR PROGRAM IN COMESA: EVIDENCE FROM KENYA'S BILATERAL TRADE (2010-2021)

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ABSTRACT

The paper investigates the effect of authorized economic operator program on bilateral trade between Kenya and trading partners in the Common Market for Eastern and Southern Africa. The augmented gravity model was estimated using 2010-2021 data for 17 cross-sectionals. The Panel Correlated Standard Error method results show thatimplementation of the authorized economic operator by both exporter and importer stimulates Kenya's bilateral trade volume in the Common Market for Eastern and Southern Africa. The author recommends full implementation of the authorized economic operator by the remaining 12 Member States to attain the maximum benefits of the program across the region.

KEYWORDS

Bilateral Trade, Kenya, customs trade facilitation, authorized economic operator

1. INTRODUCTION

Customs trade facilitation lowers trade costs by reducing the time taken in clearance and customs. Moreover, trade facilitation reduces transportation costs by reducing production and transaction costs [1]. Customs trade facilitation programs implemented by countries at the national and bilateral level to reduce the cost of trade has received researchers' interest in recent years [2]; [3]; [4]. Trade facilitation reduces trade costs and transport time, thus increasing the potential for bilateral trade [4]. Researchers have identified that soft tariff barriers implemented by States have slowed down the benefits accrued by customs trade facilitation programs. The Common Market for Eastern and Southern Africa (COMESA) has adopted various initiatives towards facilitating trade in the region. Such include the Authorized Economic Operator (AEO) program implemented at the national level. Each country implements different AEO programs offering different scope to accredited firms. However, COMESA is implementing a regional AEO program that is expected to harmonize the procedure and criteria for granting the status [5]. At the national level, countries have adopted the AEO program to reduce the time taken in customs, thus reducing the cost incurred in customs and clearing (Kenya Revenue Authority [6]. Nine COMESA Member States have fully implemented the AEO programs at the national level. Moreover, five countries, Eswatini, Zambia, Ethiopia, Sudan, and Madagascar, have partially implemented or piloted the AEO program [5]. Kenya has implemented the AEO program, extending the status to clearing agents, importers, exporters, and transporters. Firms accredited with the AEO status benefit from low rate of physical inspection, rapid release time, clearance of goods at the authorized economic operator's premise, low rate of data requirements and documentation and deferred payment of taxes, charges, and duties [7].

Kenya's AEO program is managed by the Kenya Revenue Authority (KRA)(KRA, 2019). As of 2020, KRA had accredited more than 218 firms, the highest in the COMESA region [8]. Although Kenya has made major strides in implementing the AEO program, its bilateral trade with COMESA Member States remains low compared to other countries outside. The main trading partners for Kenya in Africa include Uganda, the main destination for Kenya's exports; Tanzania, which is not a COMESA Member State; and Rwanda and Egypt, which are members of COMESA. While exports to Uganda accounted for 11.12 per cent of the total exports in 2022, exports to Tanzania, Rwanda, and Egypt accounted for 6.57 per cent, 4.60 per cent and 3.06 per cent of the total value of exports, which is low compared to the combined share of exports to United States at 9.15 per cent, Netherlands, at 7.97 per cent and Pakistan at 7.34 per cent [9].

High costs associated with trade reduce the potential for bilateral trade. Trade facilitation reduces transport, transaction, and information costs, thus enhancing bilateral trade. Implementing Authorized Economic Operator is expected to reduce transaction and transport costs, thus encouraging firms to engage in trade. With Kenya implementing the AEO since 2010, its bilateral trade in COMESA remains low [9]. While the major export destination is Uganda, a member of COMESA, it is the only country in the top five export destinations for Kenya's exports. Furthermore, the major import origin for Kenya is China, which is also outside Africa. Despite that, Kenya is the second contributor to intra-COMESA exports, accounting for 15.85 per cent of total intra-COMESA exports in 2021 and the third importer, accounting for 10.50 per cent of intra-COMESA imports in the same period. This implies that Kenya is a major trading partner in COMESA [5].

Therefore, it is worth investigating customs trade facilitation in COMESA to ascertain if implementing the authorized economic operator program affects bilateral trade volume between Kenya and its trading partners. Previous studies have shown that authorized economic operator stimulates intra-COMESA bilateral exports [4]. Therefore, there is a need to investigate this effect on a single country across a panel . Thus, this paper explores the problem: What is the effect of exporter and importer-authorized economic operator programs on Kenya's bilateral trade in COMESA. Therefore, the paper investigates the objective; to analyze the effect of authorized economic operator on Kenya's bilateral trade in COMESA.

2. LITERATURE REVIEW

This study adopted Ricardo's comparative theory to explain how customs trade facilitation relates to bilateral trade. The theory advanced by [10] looks at the opportunity cost of producing the same goods between two countries using labor. Ricardo used England and Portugal to explain his arguments. Ricardo posits that the comparative cost of production determines trade patterns. He, therefore, used two countries, A and B and two goods (x and y) with Labor (L) to explain trade between two countries [11].

Ricardo thus assumes that trade between Kenya and partner countries will occur based on the opportunity cost of producing a good for both countries. For Kenya to be the exporter of good *x*, the relative cost of producing such good in Kenya should be lower than producing the same good in the partner country. Similarly, if Kenya is to export good *y* to a partner country, then the relative cost of producing that good in Kenya should be lower than in the partner country. Otherwise, if the relative cost of producing good x is lower in the partner country, trade between Kenya and the partner country will not occur based on good *x*.

Authorized economic operator accredited firms are keen on comparative advantage while engaging in trade. The firms will choose to import or export depending on the opportunity cost of producing a good in the country of origin, which is the potential benefit that a party loses for

selecting one good over the other. Thus, traders will choose to export that good with lower opportunity cost to take advantage of the profits and lower cost of trade. In order to encourage trade, countries reduce total costs by reducing transaction costs.

Therefore, if such assumptions are met, and nation A produces good x at a lower cost than country B, trade will take place between the two when the cost of producing x in country A is not equal to the cost of producing x in country B. As a result, A will import good y, for which it has a comparative disadvantage in producing while exporting good x to country B, where it is more cost-effective to make domestically. Similarly, country B will export good *y* for which it has a comparative advantage in producing such that;

Table 1. Circumstances under which Trade occurs between two Countries, A and B

δ_A^x	δ_B^x	Scenario 1: $\delta_A^x < \delta_B^x$
δ_A^y	δ_B^y	Scenario 1: $\delta_A^y < \delta_B^y$

Since a country engages in trade based on production and transaction costs, scenario 1 is impossible in a dynamic world. Therefore, while transferring goods from the place of production to the point of consumption, countries must take into account transaction costs. This means that if country A produces good *x* to export to country B, the total cost involved in exportation is an aggregate of production and transaction cost presented in equation 1.

$$TC_{AB}^x = \delta_A^x + T_{AB} \qquad (1)$$

Where TC_{ij}^x is the total cost of exporting good *x* from country A to country B, δ_A^x is the cost of producing good *x* in country A, and T$_{AB}$are the transaction costs of exporting good *x* into country B.

Therefore, for country A to produce and export good *x* to country B, then the producing good x in Country A should be relatively cheaper than producing the good in country B. Implementation of trade facilitation programs such as authorized economic operator boosts bilateral trade byreducing total trade costs mostly achieved through manipulation of transaction costs T_{ij} or production costs. Thus, based on comparative advantage theory, customs trade facilitation influences bilateral trade through manipulating bilateral border costs;

$$X_{AB} = f(T\delta_{AB}) \qquad (2)$$
$$T\delta_{AB} = f(ctf) \qquad (3)$$

Where X_{AB} are exports from country A to country B, $T\delta_{AB}$ are bilateral border costs between country A and country B and ctf are customs trade facilitation programs. Equation 2 shows that exports are a function of bilateral border costs, while equation 3 shows that the bilateral border costs are a function of customs trade facilitation. Therefore, the equation adopted in the gravity model to represent the effect of authorized economic operator on bilateral trade is;

$$X_{AB} = f(ctf) \qquad (4)$$

Recent research has shown a positive relationship between customs trade facilitation programs and bilateral trade. Researchers have conducted studies in different regions focusing on customs trade facilitation, all converging on the argument that trade facilitation programs stimulate bilateral trade.

A study by [4] investigated how authorized economic operator among the Organization of Islamic Countries (OIC) member States affect bilateral trade betweens 2000-2017. The authors used a time-variant importer AEO dummy to proxy trade facilitation and estimated the gravity model using Poisson Pseudo Maximum Likelihood. The findings indicate no effect of AEO programs on bilateral trade in the panel. Still, the effect was positive for 2017, such that a unit increase in AEO led to a 1.02 per cent increase in bilateral trade. Different from [2]'s study, the author adopts the Panel Correlated Standard Error method in estimation to take care of not only heteroscedasticity but also autocorrelation and cross-sectional dependency.

[3] studied the effect of authorized economic operator accreditation on trade flows in Uganda between January 2008 and December 2016. The study used firms as the unit of trade and applied gravity model. The difference in Difference method results shows that AEO-accredited firms experienced increased monthly trade volumes compared to non-accredited ones. A unit increase in AEO-accreditation increased monthly trade flows by 0.15 per cent. Unlike [3], the author explores authorized economic level at the macro level and uses annual data to investigate the effect of the Authorized Economic Operator Program in COMESA.

A recent study on customs trade facilitation in COMESA was conducted by [4]. The study covered 16 COMESA countries using a 2018 cross-sectional. An augmented gravity model was estimated using Poisson Pseudo Maximum Likelihood (PPML) to determine the effect of customs trade facilitation on intra-regional trade in COMESA. The findings indicate that authorized economic operator for importer and exporter countries increased bilateral exports in COMESA by 1.74 per cent, Automated Systems for Customs Data (ASYCUDA) stimulated bilateral trade exports in COMESA by 1.06 per cent, while importer and exporter single window increased the level of bilateral trade in COMESA by 5.7 per cent. To contribute to this study, the author focused on panel rather than cross-sectional data and estimated the model using the Panel Corrected Standard Error method.

3. MATERIALS AND METHODS

3.1. Scope

The paper focuses on COMESA and makes specific conclusions based on Kenya. The study analyzed the effect of authorized economic operator on Kenya's bilateral trade in COMESA covering the period 2010 to 2021. Seventeen countries were studied in this paper following the availability of data on trade with Kenya. Eight of the 17 partner countries explored had implemented the authorized economic operator program. The study covered Burundi, Egypt, Comoros, Sudan, the Democratic Republic of Congo, Ethiopia, Libya, Mauritius, Madagascar, Malawi, Rwanda, Seychelles, Tunisia, Uganda, Zambia, Eswatini, and Zimbabwe. Burundi,Egypt, Malawi, Mauritius, Rwanda, Tunisia, Uganda and Zimbabwe have fully implemented the authorized economic operator program.

3.2. Research Design

The paper adopted quantitative research design [12]. The design was chosen for its ability to employ empirical evidence in making conclusions. The design allowed the author to formulate study objectives, design the methodology, collect the data, process, analyze and report the findings. Numerical data was collected, arranged into panels, and analyzed quantitatively to respond to the study objectives.

3.3. Empirical Model

The paper employed the gravity model. The model by [13] assumes that trade between two countries is proportional to the economic size and inverse to the distance [13]; [14]. The researcher used panel data to avoid misspecification issues resulting from using time-invariant variables in a cross-sectional [15]; [16]. Equation 5 presents the traditional gravity model of trade applied in previous studies focusing on international trade [4]; [3]; [17]

$$X_{ij=K\frac{Y_i Y_j}{D_{ij}}} \qquad (5)$$

Where X_{ij} is the value of exports from country *i* to country *j*, K is a constant, Y_i and Y_j are the economic sizes of country i and j, and D_{ij} is the distance between country *i* and *j*.

Variables such as landlocked, common border, common language, and colonial links add to the robustness of the gravity model [18]. Furthermore, trade costs allow the introduction of trade facilitation variables into the gravity model. The gravity model used in this paper is applied by[4], who estimated the effect of ASYCUDA, AEO and SW on intra-COMESA bilateral trade using 2018 cross-sectional data. Different to [4], this study is a panel covering 2010-2021 data across 17 countries. Therefore, the augmented gravity model is presented as;

$$lnTrade_{ijt} = \beta_0 + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 DIST_{ij} + \beta_4 LNDL_{ij} + \beta_5 LANG_{ij} + \beta_6 AEO_{ij} + \varepsilon_{ijt} \qquad \textbf{(6)}$$

Where $\beta_{1-}\beta_6$ are the coefficients of estimation; $Trade_{ijt}$ is bilateral trade volume from country i to j measured in time t; GDP_i *a*nd GDP_j denotes the GDP for the exporting country and importing country in time t; $DIST_{ij}$ is the physical distance between country i and j; $LNDL_{ij}$ is a dummy variable taking a value of 1 when the importer is land locked and zero; otherwise; LANG is a dummy taking a value of 1 when two countries share a common language and zero otherwise; AEO is a dummy taking a value of 1 if both countries have implemented AEO and 0 otherwise; e_{ijt} is the stochastic error term.

Since the data was found to have issues of heteroscedasticity, cross-sectional dependency and serial correlation, the Panel Correlated Standard Error (PCSE) estimator was used to test the hypothesis [19] ; [20]. The estimator was chosen for its characteristic of handling the said panel data issues in cases where N>T. The number of cross-sectionals in this study is 17 across 11 years.Thus, a case of large N and small T. The author applied Stata 14 to run the model, and tables were used to present the data analyzed using inferential statistics.

3.4. Data and Data Sources

Panel data was collected annually between 2010 and 2021 across 17 countries. Eight of these countries have fully implemented the authorized economic operator program. Panel data was adopted to provide large data points, reducing collinearity between independent variables [21]. Data on exports and imports, which formed the dependent variable, were obtained from IMF Direction of Trade measured in USD. Exporter and importer GDP were obtained from the World Development Indicator (WDI) database and measured in current USD. Data on distance, common language and landlocked measured as dummies was compiled from Centre d'Etudes Prospectives et d'Informations Internationales (CEPII). Data on the variable of interest, authorized economic operator, was obtained from the World Customs Organization's 2020 Compendium of Authorized Economic Operator and was measured as a dummy.

4. RESULTS AND DISCUSSION

4.1. Preliminary Analysis

Tests run to ascertain the appropriate method for this study include cross-sectional dependency,unit root test, multicollinearity, heteroscedasticity, and serial autocorrelation. Cross-sectional dependence was tested using the Pesaran CD test [22]. The normal panel estimators, pooled Ordinary Least Squares, fixed effects, and random effects are biased when cross-sectional dependence is present in the data [23]. Data exhibited cross-sectional dependency as the P-value for Kenya's GDP, partners' GDP, and trade volume was significant even at a 1 per cent level. In addition, the stationarity test conducted using Pesaaran 2003 test [24] shows that the coefficients become stationary at 1st difference.

Furthermore, the data does not contain multicollinearity, as the VIF mean is 1.60, which is less than 5. However, heteroscedasticity was present in the data as the p-value results of the IM white test associated with chi(2) statistic was less than 5 per cent. This indicate presence of heteroscedasticity. As argued by [25], this is an issue in panel data.

Furthermore, the Bias-corrected Born and Breitung (2016) Q(p) statistic test with lags of 2 by[26] shows that the error term of individual observation is influenced by the error term that relates to another individual observation, thus rejecting the null hypothesis of no serial correlation. These issues are corrected using the Panel Corrected Standard Error (PCSE), which, besides handling the issues of heteroscedasticity, serial correlation, and cross-sectional dependence, produces efficient estimates when N>T, as the case of this study.

4.2. Descriptive Summary Statistics

Kenya's bilateral trade volume with selected COMESA member States averaged USD 17.42 million in value between 2010 and 2021, as shown in Table 2. A standard deviation of 1.99 shows the huge variation in bilateral trade volume. While some countries recorded zero imports, which reduced the value of trade volume, others recorded close to zero exports. The minimum value of trade volume within the period under review was USD 12.08 million. On average, the log of GDP for Kenya and its trading countries averaged USD 25.01 million and USD 23.51 million, respectively. While distance averaged 7.53 kilometers, language, authorized economic operator and landlocked averaged 0.47 as these were dummies.

Table 2. Descriptive Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
LnTrade volume	17.421	1.988	12.082	20.851
LnGDP_i	25.011	.284	24.539	25.426
LnGDP_j	23.506	1.463	20.267	26.725
LnDIST	7.536	.606	6.226	8.528
LNDL	.470	.500	0	1
LANG	.470	.500	0	1
AEO	.470	.500	0	1

Source: Author's calculations, 2023

4.3. Correlation Analysis

Table 3 shows the correlation between independent variables. A high correlation of above 0.8 indicates the presence of multicollinearity in data, prompting the test for multicollinearity(Gujarati 2009). The Authorized Economic Operator (AEO) is moderately correlated with all the variables. Authorized Economic Operator is positively correlated with Kenya's GDP and distance while negatively correlated with partner GDP, landlocked and common language. The highest correlation in the data is between landlocked and distance, which is also positive.

Table 3. Correlation Matrix

e(V)	LnGDP_i	LnGDP_j	LnDIST	LNDL	LANG	AEO	_cons
LnGDP_i	1.0000						
LnGDP_j	-0.0645	1.0000					
LnDIST	0.0237	-0.3680	1.0000				
LNDL	0.0148	-0.2291	0.6207	1.0000			
LANG	-0.0249	0.3858	-0.2260	-0.4888	1.0000		
AEO	0.0175	-0.2716	0.1448	-0.0377	-0.2588	1.0000	
_cons	-0.9723	-0.0733	-0.1488	-0.0959	-0.0154	0.0042	1.0000

Source: Author, 2023

4.4. Gravity Model Results; AEO and Bilateral Trade between Kenya and Trading Partners in COMESA

The Panel Corrected Standard Error (PCSE) results show that the effect of implementing an authorized economic operator program on Kenya's bilateral trade in COMESA is positive and significant. This implies that a unit improvement in importer and exporter implementation of the authorized economic operator increases Kenya's trade with COMESA trading partners by 0.36 per cent. The gravity model variables take the expected signs. Kenya's GDP per capita coefficient is positive, implying that a percentage increase in Kenya's GDP per capita increases Kenya's bilateral trade with COMESA Member States by 0.28 per cent. Furthermore, the partner GDP per capita coefficient is also positive, implying that a percentage increase in partner country GDP per capita boosts bilateral trade between Kenya and trading partners in COMESA by 0.77 per cent. On the other hand, a percentage increase in kilometer distance between Kenya and its trading partners decreases bilateral trade by 2.17 per cent. The gravity model results are consistent with theory. Trade cost variables represented by landlocked and common language are also presented in the results. Landlocked and common language takes the expected signs in this paper. Bilateral trade between Kenya and landlocked countries in COMESA decreased by 0.28 per cent per unit increase in landlocked, while sharing of a common language increased the level of bilateral trade between Kenya and trading partners in COMESA by 0.73 per cent.

Table 4. Authorized Economic Operator Program and Kenya's Bilateral Trade in COMESA

	Coefficients	Standard errors
LnGDP _i	.278	(.228)
LnGDP _j	.766***	(.030)
LnDIST	-2.175***	(.222)
LNDL	-.288*	(.186)
LANG	.734***	(.083)
AEO	.364***	(.095)
Cons	8.448*	(.151)
No of obs.	204	
Prob>chi2	0.000	
R-squared	0.56	

Significance level * p < .10, ** p < .05, *** p < .01
Source: Author, 2023

4.5. Discussion

The main findings of this paper conform to empirical literature and theory. The main findings are consistent with [4] results that a unit increase in authorized economic operator for exporters and importers in COMESA increases trade exports by 1.74 per cent. Furthermore, the findings conformed to [3] that AEO firm accreditation in Uganda increases trade volume by 0.15 per cent. [2] find that importer adoption of AEO positively but insignificantly influences bilateral trade among Islamic Organization Countries (IOC) Member States. These findings confirm that AEO operationalization is essential for bilateral trade flows.

On the other hand, theory argues that as trade costs decrease, trade becomes affordable, thus increasing bilateral exports and imports. For authorized economic operators, accreditation of firms gives them an added advantage in that the number of documents and data required is low, their goods experience a low rate of physical inspection and examination, deferred payment of duties and taxes, a single customs declaration for imports in each period and rapid release time for their goods. This then reduces the time and cost involved between document declaration and offloading of goods at the destination. Therefore, AEO programs have facilitated trade by reducing the time and costs involved, as [10] argued in his theory of comparative advantage.

The coefficient of Authorized Economic Operator in this study is small, at 0.36 per cent. This implies that the effect felt on bilateral trade between Kenya and COMESA member States since the first member State implementation of the AEO program is not high. With only eight trading partners having completely operationalized the program at the national level, the limited magnitude suggests that while some of Kenya's trading partners have implemented the program, trade benefits from it have not yet reached their full potential. Therefore, this means that the implementation of the authorized economic operator program has a high potential for Kenya-COMESA bilateral trade.

5. CONCLUSION AND POLICY RECOMMENDATIONS

The study estimated the effect of implementing the authorized economic operator program on Kenya's bilateral trade volume in COMESA between 2010 and 2021 using 17 partner countries. The findings show that AEO program implementation by both exporter and importer boosts bilateral trade volume between Kenya and its trading partners in COMESA. Although COMESA trades more with outside partners, the main export destination being the European Union, so does

Kenya. This leaves a few of Kenya's exports destined for COMESA Member States, with Uganda, Egypt and Rwanda being the main export destinations for the period under review. Among these, only Uganda is among Kenya's top trading partners globally. Among the trading partners under review, Burundi, Egypt, Mauritius, Rwanda, Tunisia, Uganda, and Zimbabwe have implemented authorized economic operator programs.

The author recommends that Kenya trading partners and COMESA secretariat expedite the adoption of policies aimed at fast-tracking the implementation of authorized economic operator at the national level. Furthermore, the secretariat could regionally harmonize these programs such that the vetting process and the terms embedded in the accreditation are uniform. This could be done by fast-tracking the implementation of the AEO COMESA Regional guideline adopted in 2019.

Furthermore, the Kenya Revenue Authority (KRA) and agencies handling AEO accreditation in other Member States should partner in capacity building and sensitization on the role of authorized economic operator program in trade facilitation for importers, exporters, clearing agents and transporters. This could be done through forums and workshops organized for specific trade actors at the borders or national level.

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