



# Institutions and export performance: firm level evidence from Kenya

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## Abstract

This study sought to examine how institutions shape export performance using Kenyan data. The left-censored random-effects Tobit and the random-effects Generalized Least Squares (GLS) estimators were applied on panel data obtained from World Bank's Enterprise Surveys covering 2007, 2013, and 2018. Using a vector of institutional variables touching on the efficiency of the court system, access to trade finance, tax inspections, bribes during tax inspections, on-the-job trainings, customs regulations, quality certifications, informal competition, operating licenses, and trade permits, the results indicate that specific institutions on quality certification, trade finance, and on-the-job trainings are associated with improvement in export performance while bureaucratic tax inspections dampen prospects from export trade. The findings are robust as the coefficients from the Tobit estimator are reinforced by those from the GLS estimator. These findings constitute an original attempt to examine the interlink between institutions and export performance with specific focus on the Kenyan context. Pertaining the trade environment, the findings point towards a need to enhance institutional capacity, undertake reforms of export-related institutions, invest towards a national quality infrastructure, and entrench self-regulation not only in Kenya, but also among other developing countries.

**Keywords** Institutions · Export performance · Firm level

**JEL Classification** F13 · F14 · K11 · K12 · K23 · K34 · L5

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## 1 Introduction

The contribution of exports to Kenya's GDP fell persistently between 2001 and 2020. This happened at a time when Kenya is a member of numerous free trade agreements which have significantly reduced tariff barriers to trade. Whereas the share of exports of goods and services in the country's GDP between 2001 and 2020 stood at 20.42%, it fell to 17.21% between 2011 and 2020 before further shrinking to 13.87% between 2016 and 2020 (World Development Indicators 2021).

Within the East African Community (EAC), the share of exports of goods and services in GDP of Uganda and Rwanda between 2001 and 2020 averaged 14.75 and 12.41 %, respectively, before rising to 14.87 and 18.41 %, respectively, between 2016 and 2020. Over the same period, the average contribution of export trade to Kenyan GDP lagged that of Sub-Saharan Africa (SSA) (29.22%), Middle East and North Africa (MENA) (44.51%), Organization for Economic Cooperation and Development (OECD) (26.20%), and the European Union (EU) (41.10%). Table 1 presents country and regional comparison of export trade as share of GDP.

For Kenya, this could mean that the trade sector is expanding slower than other sectors in the economy. Since Kenya is signatory to numerous free trade agreements which eliminate tariff barriers to trade for most of tariff lines, the present study undertakes to examine what else could explain the decline in the country's export activity. Research has demonstrated that the impact of institutions on external trade can be larger than the impact of tariffs (Marquez-Ramos et al. 2012; Chang 2010; Anderson and Marcouiller 2002; Levchenko 2007). By this argument, institutional inefficiencies could explain why the contribution of the export sector to Kenya's GDP has declined in the recent past despite the country benefiting from free trade agreements.

Against this background, the current study seeks to assess the role institutions play in shaping export performance among developing countries but using firm level data from the Kenyan context. It makes an original attempt to examine the inter-link between institutions and export performance and demonstrates how the findings

**Table 1** Country and regional comparison of export trade as share of GDP. Source: World Development Indicators (2021)

Country/region	Time period		
	Average (2001–2020)	Average (2011–2020)	Average (2016–2020)
Uganda: Exports of goods and services (% of GDP)	14.74	14.83	14.87
Rwanda: Exports of goods and services (% of GDP)	12.40	15.41	18.41
Kenya: Exports of goods and services (% of GDP)	20.42	17.21	13.87
SSA: Exports of goods and services (% of GDP)	29.22	27.38	24.31
MENA: Exports of goods and services (% of GDP)	44.51	44.44	40.68
OECD: Exports of goods and services (% of GDP)	26.20	28.40	28.90
EU: Exports of goods and services (% of GDP)	41.10	44.80	46.40

could inform policy among developing countries. Existing literature on institutions within the Kenyan context focuses on economic outcomes other than export performance (Bates 1989; Kanyinga and Odote 2019; Boone et al. 2019; Klaus 2020; Mai 2015) except Tyce (2020) whose work investigates the role of the broader domestic political economy in shaping export performance of the country's horticulture sector. On the global scene, however, studies have revealed positive influence of institutions on export performance (Abreo et al. 2021; Ngo et al. 2016; Bournakis and Tsoukis 2016; Krammer et al. 2018).

Institutions<sup>1</sup> are devised constraints that structure economic interactions<sup>2</sup> (North 1991). Examples of institutions include constitutions, rules, laws, and property rights. They are devised to create order and reduce uncertainty in undertaking trade exchanges. They lower trade transaction costs and thus create incentives to engage in export trade (Grossman and Hart 1986; Hart and Moore 1990). Information asymmetry is a key source of uncertainty, risks, and increased trade costs since traders engaged in export trade do not have complete information about those they trade with, thus leading to unpredictability. Institutions come in handy to coordinate trade activities, structure the rules of the game, and provide a framework for obtaining remedy should a party breach a trade agreement. Further, asymmetry of information pertaining attributes of goods and services being exchanged, or the performance and trustworthiness of parties in a trade exchange necessitates creation of institutions with an aim of shaping and coordinating trade exchanges and interactions among traders (Nunn 2007). For example, institutions like property rights, enforcement of trade contracts, and protection of investors against expropriation are important in cushioning traders against uncertainty and unpredictability of parties in a trade agreement (Kapri 2021; Handley and Limao 2017). Whereas efficient institutions are likely to promote export trade, inefficient institutions could lead to soaring of trade costs and this could create a disincentive to engage in export trade, leading to a slower expansion of the export trade sector in comparison to other sectors not only in Kenya, but also among other developing countries.

Measures of institutions used include efficiency of the court system, access to trade finance, frequency of tax inspections, bribes during tax inspections, on-the-job training, rigidity of customs regulations, internationally recognized quality certifications, informal competition, operating licenses, and trade permits. The left-censored Tobit estimator is applied to panel data obtained from World Bank's Enterprise Surveys covering 2007, 2013, and 2018. For robustness check, we further apply the Generalized Least Squares (GLS) estimation technique to the same data and compare the results.

The findings are consistent with the stylized facts and literature. Specifically, the study demonstrates that tax inspections are associated with decline in exports, while trade finance, on-the-job training, and quality certifications positively and significantly grow exports.

<sup>1</sup> Henceforth we refer to institutional and regulatory framework as just institutions or institutional framework.

<sup>2</sup> They support an environment that induces increased trade exchanges.

The rest of this study is structured as follows: Sect. 2 reviews relevant empirical literature, 3 presents stylized facts, 4 documents the methodology, 5 presents results and discussions, and 6 concludes and proffers relevant policy implications.

## 2 Empirical literature

This study extends existing literature on the interface between institutions and export performance. Although there is rich literature on the interlink between institutions and export trade among developed countries, it is scanty among developing countries like Kenya. Further, few studies have wholesomely looked at institutions from the prism of the current study—efficiency of the court system, access to trade finance, tax inspections, bribes during tax inspections, on-the-job trainings, customs regulations, quality certification, informal competition, operating licenses, and trade permits. The findings from this study therefore inform policy and contribute to literature among developing countries.

Soderlund and Tingvall (2014) examine the dynamic effects of institutions on exports at the firm level. They observe that weak domestic institutions raise the cost of engaging in economic activity and in effect, alter trade patterns. Specifically, they note that trade flows from countries with weak institutions are not only small, but also short-lived. Although their work attempts to link institutions to exports just like the current study, a divergence is that while their focus is on institutions in developed export-recipient countries, the current study focuses on institutions from developing exporter countries. Within developing country context, Abreo et al. (2021) show that specific institutions on regulatory quality, rule of law, and governance significantly influence Colombian exports.

Martinez-Zarzoso and Marquez-Ramos (2019) examined the link between institutions and trade and tested the claim that better governance reduces trade costs thus promoting exports within the Middle East and North Africa (MENA) region. Indeed, the MENA region experiences poor institutional quality transcending inefficient laws and regulations, rule of law and civil rights, and deficiencies in public administration. The main channels through institutions reduce trade costs and promote exports include contracting support and implementation of long-term trade deals, enhancement of investments and productivity, and through reduction of uncertainty and enhancement of trust and transparency. The results indicate that the quality of institutions in the exporting country influences export trade. Alvarez et al. (2018) also demonstrate that institutions in the importing countries and the institutional distance between the exporting and importing countries influence export activity. Similar studies done within the context of developing countries corroborate these findings by indicating that efficient institutions foster export trade through reduction of non-tariff barriers (Milner and Kubota 2005; Yu 2010; Volpe et al. 2011). The present study similarly examines the effect of institutions in the exporting country and hypothesizes that institutions influence exports through the similar channels.

Ge et al. (2020) investigate the linkage between regional institutions and participation in global value chains using Enterprise Survey Data from World Bank. They find that institutions play a critical role in enabling countries to participate in global

value chains whereby countries with weaker institutions participate less in the global value chains. Specifically, they show that improvement in regulatory quality, effectiveness in governance, stability of the political space, and rule of law significantly enhance participation in global value chains.

Evidence also shows that as expenses incurred by firms, taxes eat into revenues from economic activities like export trade (Zheng and Zhang 2021). Governments, however, have incentive to enforce tax compliance as a mechanism of enhancing revenue collection to finance public programs (Buettner and Grimm 2016). Research building upon this evidence indicates that firms have incentive to evade paying taxes in a bid to optimize on profits but doing so comes with the risk of incurring sanctions in the form of fines and charges tax officials uncover attempts to evade tax payments. Fines and charges imposed on non-compliant firms by the taxman, however, increase the cost incurred by the firms (Fan et al. 2020). Further, evidence shows that some non-compliant firms have incentive to offer bribes to tax inspectors to avoid penalties (Cule and Fulton 2009). Non-compliance encourages bribery which ends up increasing transaction costs and straining firm operations (Safavian et al. 2001). Work by Alm et al. (2016) has shown that bribes shrink sales by about 4% points. Overall, evidence shows that tax non-compliance and bribery encourage rent-seeking among tax inspectors and the outcome is higher transaction costs, bottlenecks in firm operations, and decline in performance (Vlachos and Bitzenis 2016).

Elsewhere, studies have shown that there is an interlink between institutions and quality exports (Faruq 2011). Institutions have been examined from the prism of corruption, inefficient bureaucracy, efficiency of the court in promoting rule of law, and high risk of expropriation of property rights (Berkowitz et al. 2006; Azim and Fujiwara 2012). When law enforcement institutions are inefficient, incentives for bribery and corruption grow (Anderson and Marcouiller 2002, 2006). By protecting property rights, the court system encourages economic exchange. Overall, better institutions foster more trade activity (Dollar and Kray 2003; Francois and Manchin 2013).

Other studies have shown that institutions that support firms to operate formally encourage economic performance (Rossi et al. 2021). Institutions like operating licenses and trade permits enable firms to engage in lawful activities while providing guarantees that health and environmental safety is protected. Studies have shown that access to trade finance erodes market-entry barriers by providing liquidity needed to support storage and transport costs, and sunk costs (Bergin et al. 2021; Rossi et al. 2021).

On-the-job training programs enhance worker skills, wages, productivity, and self-regulation (Liu and Lu; 2016; Hara 2014; Morikawa 2021). Yung and Nguyen (2020) observe that managerial capability supports decision-making. Work by Blind et al. (2018) has shown that quality certifications promote economic activity and nudge consumers to have trust and confidence that exported goods and services satisfy international safety and quality standards and do not pose health and environmental risks.

Nash et al. (2010) has shown that rigid customs regulations impede economic activity. Kaoru et al. (2021) has further argued that countries are likely to export less

if the destination market has higher regulatory burden. Cumbersome custom regulations raise marginal cost of engaging in trade. Higher regulatory burden makes certain economic activities less attractive and may nudge exporting firms to narrow the portfolio of goods and services traded. Moreover, if customs regulations are rigid, firms are likely to incur losses emanating from costs associated with storage, warehousing, spoilage, wastage of perishable goods, and missed market opportunities.

Bengtsson (2015) has illustrated that rigid regulations encourage firms to operate informally to enhance cost efficiency. Operating informally could be associated with a comparative advantage especially if firms evade costs associated with the rigid regulations. Dario (2021) observes that informal firms may drive formal enterprises out of the market through channels like lower prices for the same goods and services. Gender diversity affects performance of firms through managerial capacity and strategic decision-making (Martin and Lerong 2017). Fernando et al. (2020) has shown that incorporating female perspectives and leadership styles in running of firms improves managerial capability and decision-making. Ibhagui and Olokoyo (2018) note that firm size influences economic performance. More specifically, there exists differences between small and large firms attributable to economies of scale (Samiee and Walters 1990).

Most of these studies have used panel and cross-sectional data. Outstanding estimation techniques include use of discrete time-models especially Probit and Logit. The Ordinary Least Squares (OLS) and the Tobit estimation approach have been used for continuous and censored dependent variables, respectively. When the dependent variable is censored, the Tobit estimator is superior to the other estimators, but may converge to OLS and the Generalized Least Squares (GLS) estimators as the number of zeroes in the dependent variable decrease (Kalwij 2003). A notable gap is that although the literature focuses on institutions and performance measures, none has examined the interlink between institutions and export performance within the context of Kenya as a developing country. Since the concept of institutions is multidimensional, it is almost impossible to measure it conclusively when undertaking empirical estimations. The current study is therefore limited in that the variables used in the current estimation may arguably not be all the variables that would measure institutions conclusively.

### 3 Relevant Kenyan institutions

The 2010 Constitution of Kenya establishes key institutions whose mandates are crucial in export trade promotion. Chapter 10 establishes the judiciary with vested authority in hearing and determining criminal and civil matters that include cases on breach of trade contracts by parties into a trade agreement (Republic of Kenya 2010). Owing from its mandate to enforce contracts, a judiciary that is efficient, fair, and impartial is important in providing incentives to traders to participate in export trade without worrying about breach of contract by parties involved. Article 40 protects right to property including intellectual property rights, such that it provides safeguards against the risk of expropriation of private property. In circumstances where the right to property is deprived for public purposes, the constitution provides

that the government should adequately compensate the affected agents. Article 79 of the Constitution provides for establishment of the Ethics and Anti-Corruption Commission. The commission is mandated to investigate and recommend to the Director of Public Prosecutions, the prosecution of acts of corruption, bribery, economic crimes, or violation of codes of ethics. The commission is further mandated to raise public awareness on ethical issues and educate the public on costs of corruption and foster public support in taming corruption (Republic of Kenya 2011). Whereas written laws anchor formal institutions, unwritten rules of behavior and economic conduct form informal institutions and are mainly anchored on culture and encompass ethics, morals, virtues, and ethos (North 1991). Individuals may engage in acts of bribery and corruption during trade transactions simply because the culture does not recognize the acts as morally and ethically wrong.

Aside from the Constitution of Kenya, the Micro and Small Enterprises Authority is an example of an institution that promotes, develops, and regulates micro and small enterprises. Particularly, the authority is mandated to provide an enabling business environment, facilitate access to business development services including capacity building programs such as training on standards and procedures to engage in export trade, facilitate formalization and upgrading of informal enterprises, promote entrepreneurial culture, and represent trade associations which facilitate export trade by issuing certificate of origin, train exporting firms on applicable rules of origin, and disseminate information on available trade opportunities in different markets to firms (Republic of Kenya 2012a, b).

The Bribery Act of 2016 supports investigation, prevention, and punishment of bribery (Republic of Kenya 2016). Before the Act, the Anti-corruption and Economic Crimes Act of 2003 captured bribery as a form of corruption. Whereas the Anti-corruption and Economic Crimes Act mainly focuses on graft in the public sector, the Bribery Act comprehensively covers bribery and corruption in the private sector. Compared to the Anti-Corruption and Economic Crimes Act of 2003, the Bribery Act introduces three new and diverse concepts—participation of private citizens in the fight against bribery, transnational bribery, and matching the giver and recipient of bribe in punishment. Further, the Act enshrines provisions on protection of whistle blowers and witnesses into bribery cases both in public and private sectors. Within this institutional framework, officials requesting for bribes during tax inspections should be sanctioned. The judiciary is an important institution in enforcing penalties and other provisions of the Act. The efficiency, fairness, impartiality, and independence of the judiciary in hearing and determining bribery cases as provided for in the Act are important in determining whether traders and individual trade facilitators from both the private and public sectors have incentive or disincentive to engage in bribery.

Under the Bribery Act, public officers or individuals in positions of authority in the public or private sector are obliged to report witnessed acts of bribery to the Ethics and Anti-Corruption Commission. The institutional framework provides punishment by imprisonment for up to ten years or a fine not exceeding US\$ 50,000 for failure to report witnessed acts of bribery.

The Law of Contract Act of 2012 provides a framework within which parties into agreements can draw contracts that are legally binding and enforceable before a

court of law (Republic of Kenya 2012a, b). The institutional framework eliminates risk associated with breach of contract by either party into an agreement. Although this institutional framework is expected to shape export trade, empirical studies linking specific institutions to export performance within the Kenyan context are limited.

Although these institutions are specific to Kenya, any other country would be expected to have similar institutional arrangement. Indeed, institutional weaknesses are more likely to manifest among developing countries compared to those developed, thus hampering trade more among developing countries like Kenya.

## 4 Methodology

### 4.1 Theoretical approach

Firms<sup>3</sup> pursue a dual objective that simultaneously seeks to maximize returns from engaging in export trade and minimizing costs associated with trading. Firms have incentive to engage in export trade when either the marginal return is larger than the marginal cost<sup>4</sup> or the marginal return is just equal to the marginal cost<sup>5</sup>. However, should the marginal cost slightly become higher than the marginal return, the firm loses incentive to engage in export trade. When efficient, institutions are likely to keep marginal returns above marginal costs—creating incentive for firms to engage in export trade. When inefficient, however, institutions are likely to drive marginal cost above marginal return—making firms to prefer other economic activities to export trade. This phenomenon could see other sectors of the economy expand faster and contribute more to growth than the trade sector.

Indeed, when institutions mandated with facilitating and promoting export trade are inefficient due to red tape, disregard of existing laws and regulations, absence of internal policies to enhance self-regulation, or other forms of institutional weaknesses, the costs incurred by cross-border traders rise. For instance, delays in securing operating licenses due to institutional inefficiency raise costs associated with missed market opportunities if exported goods and services are not delivered within contractually binding timelines (Kapri 2021; Williamson 2000). Institutions are therefore critical in either promoting or hindering export trade, but empirical evidence on the interlink between the two is scanty within the context of Kenya as a developing country.

Institutions are measured using access to trade finance, efficiency of the court system, tax inspections, bribes during tax inspections, delays in securing operating licenses, on-the-job training, quality certification, informal competition, customs regulations, and business permits. The choice of the variables is informed by their

<sup>3</sup> In this paper, the firm is the unit of analysis. Firms are assumed to be rational economic agents.

<sup>4</sup> Firms make supernormal profits.

<sup>5</sup> In this case, firms make normal profits.



observability in the World Bank Enterprise Surveys panel data used. Gender of firm owner, managerial experience, and firm size are used as controls.

## 4.2 Data and summary statistics

The study tracks 180 firms from a panel dataset obtained from the World Bank Enterprise Surveys covering 2007, 2013, and 2018. The dataset contains institutional and export performance variables detailing recent developments in Kenya. Ibhagui and Olokoyo (2018) have used panel data for 101 firms in Nigeria but covering two waves—2003 and 2007. To ensure focus is particularly on exporting firms, we further narrow down our sample size to only 81 firms that were surveyed over the three data collection waves and had exported in at least one of the data waves. In each wave, 27 exporting firms were surveyed, making a total of 81 firms over the three waves. In 2007, 17 firms (63.00%) exported while 10 firms (37.00%) did not export. In 2013, 18 firms (66.67%) exported compared to 9 firms (33.33%) that did not. In 2018, 15 firms (55.56%) exported compared to 12 firms (44.44%) that did not export. To extend the current research, future studies could investigate the link between institutions and export performance using a larger sample size.

Export performance was measured in terms of the share of total annual sales that was exported. The average share of exports in total annual sales was 21.18 % with the minimum and maximum shares being 3.00 and 100.00%, respectively. This means that the bulk of revenues for firms in the export trade sector comes from non-export activities, pointing to a growing preference of non-export sectors to the export trade sector in Kenya.

The paper follows North (1991) to consider institutions as both formal and informal. Formal institutions encompass constitutions, rules, laws, and property rights. The formal institutions are usually external to individual firms. In this context, variables like the *court system*, *inspections frequency*, *operating licenses delays*, *trade permits*, *quality certification*, *access to trade finance*, *informal competition*, and *customs regulations* are not only formal, but also external to individual firms. Informal institutions, on the other hand, encompass *culture*, *ethics*, *morals*, *values*, *virtues*, and *ethos*. They are both informal and internal to individual firms. Variables like *bribes during inspections*, *employee training*, and *managerial experience* are internal to individual firms.

Access to trade finance is measured as a binary variable with “1” if a firm had a line of credit or loan from a financial institution at the time of survey and “0” if not. Majority of the firms (52.00%) had a line of credit or loan from a financial institution compared to 48.00% that did not. Efficiency of the court system is measured as a dummy with “1” if the court system is an obstacle and “0” if the court system is not an obstacle to operations of firms. 66.70% of firms perceived the Kenyan court system as being an obstacle to their operations. Frequency of tax inspections was measured in terms of the number of times a firm had been inspected by a tax official. Firms had been inspected for an average of 3 times within a year with the minimum and maximum number of visits being 1 and 46, respectively. The variable on bribes during tax inspections was a dummy with “1” if firms had been requested to offer bribes and “0” if not. 25.40%

of the firms had given bribes when visited by tax inspectors. On-the-job training was binary with “1” if firms had training programs for employees and “0” if not. 42.30% of the firms had on-the-job training programs for employees.

Firms possessing internationally recognized quality certification label were coded as “1” while those without were coded as “0”. 31.20% of firms possessed internationally recognized quality certification. Firms which reported practices of competitors in the informal sector to be an obstacle to their operations were coded as “1” while those which did not report practices of competitors in the informal sector as being an obstacle were coded as “0”. 78.70% of the firms reported practices of competitors in the informal sector to be an obstacle to their operations. Firms reporting customs regulations to be a barrier to export trade were coded as “1” while those which did not were coded as “0”. Majority of the firms (80.00%) reported that customs regulations to be a barrier to export trade in Kenya. Firms which had applied for an operating license were coded as “1” and while those which did not were coded as “0”. 64.60% reported to have made an application for operating license. Firms that reported trade permits to be an obstacle to their operations were coded as “1” while those that did not were coded as “0”. 70.00% of the firms reported trade permits to be an obstacle to operations.

Firms owned by women were coded as “1” while those owned by men were coded as “0”. 61.30% were female-owned while 38.70% were male-owned. Managerial experience was measured in years and the average age of the top manager in the export sector was 21.3 years with minimum and maximum years of experience being 4 and 52, respectively. Micro firms were coded as “1”, small firms were coded as “2”, and medium firms were coded as “3”. 18.50% of the firms were micro, 45.70% were small, and 35.80% were medium. Table 2 presents summary statistics for the analysis.

### 4.3 Estimated model

The Hausman specification test for presence of simultaneity was employed. The test essentially checks whether a potentially endogenous regressor is correlated with the error term (Gujarati 2003). In absence of simultaneity, OLS estimators yield consistent and efficient estimates. However, should simultaneity be present, OLS estimators do not yield consistent and efficient estimates, and alternative techniques of two-stage least squares (2SLS) and instrumental variables should be considered. In the current study, exports and customs and trade regulations are suspected to be potentially endogenous because favorable regulations are likely to encourage exports while excessive exports are likely to outcompete local firms in the destination country, necessitating tightening of customs and trade regulations that ultimately affect exports.

First, estimation of Eq. (1) is carried out and the residuals obtained. Secondly, Eq. (2) is estimated excluding the number of years the firm has been in operation but including the residuals.

$$CTR_{it} = \beta_{0it} + \beta_{1it}GE + \beta_{2it}TF + \beta_{3it}CO + \beta_{4it}IF + \beta_{5it}IB + \beta_{6it}EM + \beta_{7it}TE + \beta_{8it}QC + \beta_{9it}IC + \beta_{10it}OL + \beta_{11it}TP + \beta_{12it}Size + \beta_{13it}YO + \mu_{it} \quad (1)$$

**Table 2** Summary Statistics.  
Source: Authors' computation based on dataset

Variable	Obs	Mean	Std. Dev	Min	Max
Dependent Variable					
Exporting firms	49	21.18	22.07	3.00	100.00
Non-exporting firms	31	0	0	0	0
Institution variables					
Trade finance	75	52.00	50.30	0	1
Court system	78	66.70	47.40	0	1
Inspections frequency	63	3.40	5.90	1.00	46.00
Operating licenses delays	79	64.60	48.10	0	1
Trade permits	80	70.00	46.10	0	1
Inspection bribes	63	25.40	43.90	0	1
Employees training	78	42.30	49.70	0	1
Quality certification	77	31.20	46.60	0	1
Informal competition	80	78.70	41.20	0	1
Customs regulations	80	80.00	40.30	0	1
Control Variables					
Gender (female = 1)	80	61.30	49.00	0	1
Managerial experience	80	21.33	11.44	4.00	52.00
Size	15	18.50	39.10		
Micro	37	45.70	50.10		1
Small	29	35.80	48.20		2
Medium					3

where CTR represents customs and trade regulations, GE is gender, TF is trade finance, CO is court obstacles, IF is inspections frequency, IB is inspections bribes, EM is experience of top manager, TE is training of employees, QC is quality certification, IC is informal competition, OL is operating license, TP is trade permits, Size if firm's size, YO is number of years since the firm started operations,  $i$  is the  $i$ th firm,  $t$  is year of the data collection,  $\beta_i$  are estimated parameters, and  $\mu$  and  $\epsilon$  are error terms measuring the effect of other variables that influence export trade but are unobservable in the World Bank Enterprise panel dataset used. Table 3 presents the estimation of Eq. (1) and indicates the inclusion approach to addressing simultaneity.

$$Exports_{it} = \beta_{0it} + \beta_{1it}GE + \beta_{2it}TF + \beta_{3it}CO + \beta_{4it}IF + \beta_{5it}IB + \beta_{6it}EM + \beta_{7it}TE + \beta_{8it}QC + \beta_{9it}IC + \beta_{10it}OL + \beta_{11it}TP + \beta_{12it}Size + \beta_{13it}CTR + \beta_{14it}Residuals + \epsilon_{it} \tag{2}$$

where exports represent the share of exports in a firm's total sales, residuals are the predicted residuals from Eq. (1), while the other variables are as elaborated above.

The results from estimation of Eq. (2) are presented in Table 3. The coefficient associated with the residuals is statistically insignificant, indicating absence of simultaneity. The paper then proceeds to estimate Eq. (3) using OLS estimators. Estimation of Eq. (2) is presented in Table 4 and indicates the exclusion approach to addressing simultaneity.

**Table 3** Inclusion approach to simultaneity test

Customs and trade regulations	Coef	St.Err	t value	p value	[95%Conf	Interval]	Sig
Gender	-.044	.156	-0.28	.779	-.349	.262	
Trade finance	.105	.113	0.93	.355	-.117	.327	
Court system	.034	.144	0.23	.814	-.248	.315	
Inspections frequency	-.002	.011	-0.20	.845	-.023	.019	
Inspections bribes	.14	.131	1.07	.284	-.116	.396	
Managerial experience	-.003	.007	-0.40	.688	-.016	.01	
Employees training	-.045	.125	-0.36	.722	-.291	.201	
Quality certification	.004	.118	0.04	.971	-.226	.235	
Informal competition	.371	.158	2.35	.019	.061	.682	**
Operating license delays	.09	.12	0.75	.451	-.145	.326	
Trade permits	.156	.134	1.17	.241	-.105	.418	
Size	0						
Medium	.105	.164	0.64	.522	-.216	.425	
Large	-.081	.172	-0.47	.638	-.419	.257	
Operating years	.007	.004	1.67	.094	-.001	.015	*
Constant	.182	.281	0.65	.517	-.368	.732	
Mean dependent var		0.837	SD dependent var		0.373		
Overall r-squared		0.308	Number of obs		49		
Chi-square		18.248	Prob > chi2		0.196		
R-squared within		0.527	R-squared between		0.111		

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

The paper also tests for normality, multicollinearity, and heteroscedasticity. Residuals of the models followed a normal distribution ( $p < 0.05$ ). A Variance Inflation Factor (VIF) of 2.8 was obtained, indicating multicollinearity was not a major problem since the obtained VIF was below the limit of 10 commonly considered acceptable. Further, the *Breusch–Pagan* test for heteroscedasticity indicated that the assumption on homoscedasticity was not violated ( $\chi^2 = 0.4$ ,  $p = 0.6$ ).

Given that our dependent variable is continuous, but the desire is to limit the effect of institutions on export performance to the 49 firms in the export sector that were exporting, and to leave out firms in the sector that had a zero share of exports in total annual sales, Eq. (3) is estimated using the left-censored Tobit estimator (Tobin 1958). For panel dataset, this estimator estimates the random effects model only.<sup>6</sup> To ensure robustness, the Generalized Least Squares (GLS) estimator was additionally applied to the dataset.

<sup>6</sup> Because we are using panel dataset, the fixed effects model is inappropriate when using the censored Tobit regression as it would not accommodate variables that are constant over the various data waves. An example of a variable that is constant over time in panel datasets is gender of the owner of a firm. To accommodate for variables that are constant over the panel waves, the censored Tobit estimates the random effects model only.

**Table 4** Exclusion approach to simultaneity test

Share of direct exports in total sales	Coef	St.Err	t value	p value	[95% Conf Interval]	Sig
Gender	.106	.065	1.63	.103	-.021 .234	
Trade finance	.066	.051	1.28	.2	-.035 .166	
Court system	.007	.061	0.12	.907	-.113 .127	
Inspections frequency	-.003	.004	-0.80	.426	-.012 .005	
Inspections bribes	.029	.059	0.48	.63	-.088 .145	
Managerial experience	.003	.003	1.02	.307	-.002 .008	
Employee training	.065	.051	1.28	.201	-.035 .165	
Customs and trade regulations	.031	.07	0.45	.654	-.106 .169	
Quality certification	.104	.049	2.13	.033	.008 .2	**
Informal competition	-.115	.098	-1.17	.243	-.308 .078	
Operating license delays	-.022	.052	-0.43	.669	-.123 .079	
Trade permits	-.042	.063	-0.66	.51	-.165 .082	
Size						
Medium	.104	.066	1.57	.116	-.026 .234	
Large	.025	.076	0.33	.743	-.124 .173	
Residuals	.179	.25	0.71	.475	-.312 .669	
Constant	-.212	.141	-1.50	.132	-.489 .064	
Mean dependent var		0.115	SD dependent var		0.164	
Overall r-squared		0.489	Number of obs		48	
Chi-square		29.401	Prob> chi2		0.014	
R-squared within		0.417	R-squared between		0.527	

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

$$Exports_{it} = \beta_{0it} + \beta_{1it}CTR + \beta_{2it}TF + \beta_{3it}CO + \beta_{4it}IF + \beta_{5it}IB + \beta_{6it}TE + \beta_{7it}QC + \beta_{8it}IC + \beta_{9it}OL + \beta_{10it}TP + \beta_{11it}Size + \beta_{12it}GE + \beta_{13it}EM + \epsilon_{it} \tag{3}$$

Here, the dependent variable is specified as:

$$\begin{pmatrix} > 0 \text{ if firm exported in year } \\ = 0 \text{ if firm did not export in year } t \end{pmatrix}$$

### 5 Empirical Results and Discussions

The fitted models were good fit as shown by the p values associated with the Chi-Square statistic ( $p=0.0$ ,  $\chi^2=40.53$ ) and ( $p=0.0$ ,  $\chi^2=28.67$ ) for the Random-effects Tobit and the Random-effects Generalized Least Squares (GLS) models, respectively. Trade finance, quality certification, and firm size were statistically significant both in the Left Censored Tobit and the GLS models. Tax inspections frequency and employee training were, however, statistically significant only in the

**Table 5** Left-Censored Random-Effects Tobit Regression Results

Share of direct exports in total sales	Coef	Std. Error	T Value	p Value
Institution variables				
Trade finance	.119**	.052	2.27	.023
Court system	.031	.067	0.47	.641
Inspections frequency	-.022*	.013	-1.66	.097
Operating licenses delays	-.034	.06	-0.57	.567
Trade permits	-.037	.059	-0.63	.531
Inspection bribes	.026	.064	0.40	.691
Employees training	.109*	.057	1.90	.057
Quality certification	.174***	.054	3.21	.001
Informal competition	-.099	.072	-1.38	.168
Customs regulations	.066	.07	0.94	.347
Control Variables				
Gender	.08	.066	1.20	.231
Managerial experience	.002	.003	0.85	.396
Size				
Medium	.189**	.075	2.51	.012
Large	.067	.086	.78	.042
Constant	-.208*	.122	-1.71	.087
Sigma u	0	.043	0.00	1
Sigma e	.145***	.019	7.69	0
Mean dependent var	0.115			
SD dependent var	0.163			
Number of observations	49			
Chi-square	40.526			
Prob > chi2	0.000			
Akaike crit. (AIC)	20.443			

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Tobit model. Interpretation of results for fractional outcome variable was employed (Papke and Wooldridge 1996) for the results from the Tobit and GLS estimators. The results from the Random-effects Tobit and the Random-effects GLS are presented in Tables 5 and 6, respectively.

The results point to some promising features of institutions and the role they could play to shape export performance. For example, for every firm that secures trade financing with a financial institution, the share of exports in total sales increases by 0.12% points on average using the *Tobit estimator* compared to what would happen in absence of trade financing. Using the *GLS estimator*, the share of exports in total sales grows by an average of 0.08% points if the firm secured trade financing compared to what would happen without trade financing. The findings indicate that access to trade financing promotes exports. Trade financing erodes market-entry barriers because exporting firms meet storage and transport costs with ease (Bergin

**Table 6** GLS Regression results

Share of direct exports in total sales	Coef	Std. Error	T Value	P Value
Institution variables				
Trade finance	.079*	.047	1.69	.091
Court system	.018	.058	0.31	.760
Inspections frequency	− .003	.004	− 0.66	.506
Operating licenses delays	− .007	.049	− 0.14	.885
Trade permits	− .014	.054	− 0.25	.800
Inspection bribes	.056	.052	1.07	.285
Employees training	.069	.051	1.34	.179
Quality certification	.100**	.049	2.05	.040
Informal competition	− .049	.066	− 0.73	.463
Customs regulations	.015	.063	0.23	.817
Control Variables				
Gender	.086	.060	1.44	.150
Managerial experience	.002	.003	0.81	.416
Size				
medium	.115*	.065	1.75	.080
large	.013	.072	.18	.855
Constant	− .12	.103	− 1.17	.241
Sigma u				
Sigma e				
Mean dependent var	.115			
SD dependent var	.163			
Number of observations	49			
Chi-square	28.673			
Prob > chi2	.012			
Overall R squared	.459			
R squared within	.481			
R squared between	.415			

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

et al. 2021). Additionally, it supports bulk purchase of tradeable goods and services, and bulk storage and transportation for optimal utilization of economies of scale. Trade financing supports firms to finance sunk costs and promote export market retention by meeting recurring costs (Askenazy et al. 2015).

For firms possessing internationally recognized quality certification, the share of exports in total sales grows by 0.17% points on average using the *Tobit estimator* compared to firms with no quality certification. From the *GLS estimator*, the share of exports in total sales grows by an average of 0.10% points compared to what would happen in absence of quality certification. The findings indicate that internationally recognized quality certification promotes exports. Firms possessing quality certifications gain trust and confidence from consumers in export markets that exported

goods and services have complied with internationally recognized safety and quality standards and do not pose health and environmental risks (Blind et al. 2018). Enhanced confidence and trust on exported goods and services supports demand, which consequently fosters export performance.

More importantly, for every tax inspection visit by tax officials, the share of exports in total sales decreases by an average of 0.02% points using the *Tobit estimator*. This result indicates that the frequency of tax inspections is associated with shrinkage in exports. Although inspections aim at entrenching tax compliance (Cule and Fulton 2009), time spent with tax officials during tax inspections is time that could have been spent undertaking trade transactions or improving operational efficiency of the exporting firms (Lahiri and Ali 2021). The inspections encourage bureaucratic inefficiency which dampens export performance. Moreover, tax inspections create incentives for bribes which increase cost of engaging in export trade (Alm et al. 2016). Improving tax administration could foster exports not only for Kenya but also among other developing countries.

If firms have on-the-job training programs for workers, the share of exports in total sales increases by an average of 0.11% points compared to the scenario without the programs. Training enhances self-regulation and managerial efficiency by mitigating against institutional risk through internal controls, processes, and procedures. As a non-monetary trait of a job, training improves morale of workers and enhances productivity which in effect promotes export performance (Liu and Lu 2016). Training also inculcates institutional culture among workers. In effect, this supports mitigates institutional risks.

Lastly, the findings suggest that a firm's size is an important determinant of export performance. Specifically, from the *Tobit estimator*, the share of exports in total sales increases by an average of 0.19% points if the firm is medium compared to if the firm was a micro enterprise. From the *GLS estimator*, the share of exports in total sales increases by an average of 0.12% points if the firm is medium compared to if it was a micro enterprise. This finding is consistent with existing literature which illustrates that exporting firms tend to be larger (Turkcan et al. 2022; Bernard et al. 2012; Wagner 2016). Further, firm size is a measure of firm's specialization in export trade, ability to tap into economies of scale, and better managerial decision-making (Ibhagui and Olokoyo 2018; Samie and Walters 1990).

The results speak to the shrinking export performance of Kenya despite the country being a signatory to numerous free trade agreements which has largely eradicated entry barriers for Kenyan exports. Enhancing institutional effectiveness could therefore play an important role in promoting export performance not only in Kenya but also among other developing countries. Institutions enhance certainty and reduce trade costs with the outcome being growth in export trade activity.

## 6 Conclusion and Policy Implications

The paper sought to examine the role institutions play to shape export performance as a channel for long-term growth and development in Kenya as a developing country. The paper's main contribution entails examining the effect of institutional



variables—court system efficiency, trade finance, tax inspections, bribes during tax inspections, on-the-job training, customs regulations, internationally recognized quality certifications, informal competition, operating licenses, and trade permits on export performance within the Kenyan context but with implications for developing countries generally.

Most of the findings are consistent with available stylized facts regarding firms in the export trade sector. Of particular importance is the observation that if efficient, institutions promote export performance but if inefficient, institutions dampen prospects from export trade. Specifically, institutional variables touching on access to trade finance, internationally recognized quality certifications, and on-the-job training programs promote exports, but bureaucratic tax inspections dampen prospects from export trade. Although insignificant, institutional variables like the court system, bribes during inspections, and customs regulations positively influence export performance while delays in securing operating licenses, trade permits, and informal competition shrink export activity in both the *Tobit* and *GLS estimators*.

These findings have policy implications on four main fronts—capacity, institutional reforms, a national quality infrastructure, and self-regulation. On capacity, institutions mandated with issuance of operating licenses could strengthen and expand the existing digital platforms to support capacity for efficient execution of license orders. To tame bribery and entrench self-regulation, developing countries could develop and implement institutional policies on good governance. On institutional reforms within the Kenyan context, institutional framework concerning export trade could be reviewed to enhance coherence and reduce overlaps and rigidities. On national quality infrastructure, Kenya's quality infrastructure could be embedded in a unified quality policy that promotes institutional coordination in provision of quality services concerning standards, certification, conformity assessment, and market surveillance. Lastly, self-regulation could be entrenched through nurturing of a national and organizational culture of acceptable values, morals, virtues, and customs. Through on-the-job training programs, managerial experience, and worker compliance to work ethics, institutional risks could be reduced thereby fostering export trade.

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**Conflict of interest** There are no financial and non-financial interests affecting this work.

**Ethical approval** The work has conformed and complied to research ethics and it is approved for consideration.

**Informed consent** The work is submitted to the journal for consideration with informed consent.

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