

# Electronic Cargo Tracking System and Its Effects On Revenue Realization in East Africa Member Countries

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**Abstract-** Revenue Realization is a management system that measures revenue. The process can be used to identify factors that drive revenue, measures the performance of these factors, and taking action to maximize revenue. In the East African region, Cargo travels for long distance. Unfortunately however there is an increase of theft, tax evasion, delays in clearance which results to increased cost. The main purpose of the research study was to establish the electronic cargo tracking system and its effect on revenue realization in East Africa Member Countries. The study was guided by four objectives: To establish the effect of operational performance on revenue realization. To find out the effect of cost on revenue collection on revenue realization. To establish the effect of tax losses on revenue collection on revenue realization. The study was guided by two theories namely; Transaction Cost Theory and Institutional theory. The study used an explanatory research design. The study targeted 51 senior staff, 94 middle management staff and 141 junior staff. The sample size was 47 senior staff, 92 middle management staff and 139 junior staff. Questionnaires were the major data collection instruments. The data was analyzed using descriptive and further inferential statistics including correlation and regression analysis. The findings show a positive relationship between and operational performance and revenue performance. The relationship is significant ( $r = 0.143$ ,  $p > 0.05$ ) thus operational performance has significant influence on revenue performance. There was a positive relationship between cost and revenue performance. The relationship was significant at ( $r = 0.042$ ,  $p < 0.05$ ), thus cost has significant effect on revenue performance. There was a positive relationship between tax evasion and revenue performance. The relationship is significant at ( $r = 0.116$ ,  $p > 0.01$ ), thus tax evasion has effect on revenue performance. The value of  $R^2$  is 0.239, revealing 23.9% variability in factors relating to operational performance, cost and tax evasion accounted to revenue performance variables in the model developed. The model remains significant if at least one of the coefficients is not equal to zero. The study concluded that electronic cargo tracking system has not fully reduced time in cargo clearance. Staffing cost was still a challenge at the border posts of East African Member states since the introduction of electronic cargo tracking system. There were some cases of revenue leakages at the border posts even after the introduction of electronic cargo tracking system. The study recommended that East Africa member states should come up with a common policy on ICT integration on cargo clearance. East Africa member states should come up with a common policy on staffing at the border posts. East Africa member states should ensure that Electronic cargo tracking system eliminated the

staffing cost by integrating all cargo clearing activities into the system. East Africa member states should come up with a common policy on how to prevent tax evasion. Electronic cargo tracking system should be one of the measures of ensuring there are no leakages relating to taxes. The study findings narrowed into three effects of electronic cargo tracking system on revenue performance in East Africa Member Countries. Suggestion for further study is recommended to identify other effects of electronic cargo tracking system on revenue performance in East Africa Member Countries.

## Index Terms-

**Electronic cargo Tracking System** This is a technology solution that enables real-time tracking of cargo from point of loading to point of discharge or offloading

**Tax Evasion** Tax evasion is the illegal evasion of taxes by individuals, corporations, and trusts. Tax evasion often entails taxpayers deliberately misrepresenting the true state of their affairs to the tax authorities to reduce their tax liability and includes dishonest tax reporting, such as declaring less income, profits or gains than the amounts actually earned, or overstating deductions.

**Revenue Collection** Relates to a government agency's actions to collect outstanding financial obligations from the public

## I. INTRODUCTION

Revenue collection has become an integral part of any society. It has emanated from early history of civilization through which government got funding so as to sustain its operations for the public good (Agbesi, 2013). Tax revenue collection should

comply with best practices of equity, ability to pay, economic efficiency, convenience and certainty. Just like any other organization, the government also looks at all ways and means to reduce the expenditure so as to have a reciprocal effect of the public national debt of the economy (Ireland P., 1994). Various accounting and control procedures are usually adopted in order to ensure that the spending is in line with government policy and framework. Some of the controls include budgetary measures, checks and balances and many others. This engulfs the whole rationale of any corporate be it public or non-public institution which institutes to lower expenditure and increase in revenue so as to attain ultimate objectives (Apondi, 2015).

Electronic cargo tracking in developing countries has been associated with several benefits to the transporters that include increased efficiency and productivity which results in a cost reduction benefits. The system also aides in improved reliability and service quality, usually thought of as tools to retain good customers and grow market share and revenue and lastly there is improved shipment and container integrity, built around a core of security issues (Dennis & Shepherd, 2011). The system similarly present benefits to the public sector. With the implementation of the system, there is improvement in efficiency and effectiveness of operational performance. It is a tool which is double edged with the expectation that reduction in illicit trade caused by diversion lead to increased collection of revenue from imports. The process of information processing by the border officials and other intelligence agencies is currently quite taxing and the vulnerabilities associated with container stacking are also quite high. The introduction of real-time information processing enable information to be received and dealt with much faster and also decongest the clearing process (Grottel, 2017).

## II. RESEARCH AND COLLECT IDEA

### Transaction Cost Theory

The transaction cost theory as advanced by Williamson (1985) opines that the costs of establishing and monitoring the actions of partners in influencing the entry mode choice. Transaction cost theory propose that if there are market based measures, business players was because a firm can benefit from the economies of scale of the market place. However, McIvor (2005) elucidates that a firm faces increased costs in finding or negotiating a market based agreement due to difficulties of estimating all contingencies in the agreement or because of the inability to receive a fair price due to the problems arising from information asymmetry. The use of the radio frequency identification (RFID) system use in monitoring of cargo in transit, in particular, has created enormous value by improving transit management in long global supply chains, helping reduce inventory costs by up to 70 percent while improving the service offered (Norov & Akbarov, 2012).

### Institutional Theory

The theory recognizes the embedment of institutional actors. Institutional theorists suggest that organizational actions and processes are driven by their actors in order to justify and plausibly explain their actions. According to this perspective, strategy implementations are rationally accounted for by organizational actors and rooted in the normative context, Organizations adopt a standardized set of practices The Kenya

Revenue Authority would need to align internally to be able to ensure that the new introduced system becomes part of their day to day activities. The implementers of the system would therefore need to educate the staff members internally on the benefits of the system both internally and externally in order to achieve the desired results. By educating the members internally the users of the systems was able to “own” the system (Raghu & Harrop, 2013).

### Revenue Realization

Revenue collection is an integral component of fiscal policy and administration in any economy because of its influence on national government operations and the grassroots. It is the fuel of every government as it is the main instrument through which government funding is ensured. Revenue collection should comply with best practices of equity, ability to pay, economic efficiency, convenience and certainty (Visser & Erasmus, 2005). For a government to match its performance with the needs and expectations of its citizens, it should increase its fiscal depth without incurring costly recurring overheads (Gidisu, 2012). Sound revenue system for governments is a vital pre-condition for the success in promoting efficiency in the service delivery and economic development at the counties (Ngotho & Kerongo, 2014). For most developing countries, revenue collection goes hand-in-hand with economic growth and the revenue is the lifeblood for governments to deliver essential services and to make long-term investments in public goods (OECD, 2008).

### Operational Performance

Barka (2012) carried out a study to find out a relationship between operational performance and profitability. The data from ceramic companies in Bangladesh have been taken to find out why the ceramic industry is growing rapidly which was useful to get to wholesome result. A number of operating ratios has been established as a proxy for operational efficiency. To find out the findings of the study quantitative method has been employed. Standard Deviation, Correlation and simple Linear Regression have been used with the help of predictive analytics SPSS software in order to arrive at the end result of the study. The profitability can be deduced from the fixed asset turnover. Besides it is not statistically significant. Therefore it can be said that the key performance indicators of operational performance have a relationship with the profitability in the context of the ceramic companies of Bangladesh.

### Cost

Gitau & Nzuki (2014) studied how the use of ICT has modernized cost of Tax administration procedures and improved revenue Collection at Large Taxpayer Department of Tanzania Revenue Authority. ICT was introduced into the department in 2001 for easy maintenance and timely access of records and fast processing of return so as to remove postal delays; minimize operational costs; curb cheating and plug revenue loss (TRA 2010e). Large Taxpayers and Large Taxpayer Department staff (100%) agree that, since 2001 time for processing return and responding to queries have been reasonably shortened (Victor – Nyambo 2009). TRA reports reveal that, actual revenue collection increased from TZS. 204.397.5 Million in 2001/02 to TZS. 1,605,751.2 Millions in 2008/09 while revenue contribution share rose to 41% in 2008/09 from 23% in 2001/02. Although other factors in the economy like; increased internal trade, reduced importation and more reliance on home products may cause the

increase, if there is no good tax administration, revenue was not reflected in collections. The fact that revenue has increase proves that, ICT use enhance better tax administration.

### **Tax Loss**

Manji (2015) studied the determinants of tax revenue performance in the Southern African Development Community. The results generally highlight the robust role of taxation (tax rates and tax policy harmonization variables) (alongside other important determinants) in improving tax revenue in the region, providing empirical support for extant anecdotal evidence. The empirical finds the importance of FDI towards tax revenue collected in the SADC and the existence of reverse causality (that is, a causal relationship between FDI and taxation or vice versa). Policy considerations include the need for SADC countries to carry out extensive pro-regional (coordinated) tax reforms, create a regional tax forum and promote initiatives aimed at improving FDI and ultimately tax revenue (as per existing regional protocols).

## **III. STUDIES AND FINDINGS**

Majority of respondents were neutral that electronic cargo tracking system has reduced time in cargo clearance as shown by ( $M=3.0282$   $SD=1.17118$ ), this shows that electronic cargo tracking system has not fully reduced time in cargo clearance. The study findings agrees with Al-Hawary & Abu-Laimon (2013) who argued that regional Electronic cargo tracking systems have made it possible to inspect and clear containers within the pre-set organizational benchmarks. Respondents agreed that electronic cargo tracking system has reduced cargo theft as shown by ( $M=4.2056$   $SD=0.93192$ ), this shows that there has been reduction in cargo theft since the introduction of electronic cargo tracking system. the study findings agrees with Broadway (2012) who argued that direct benefits to electronic cargo tracking to the transporters include increased efficiency and productivity, often thought of as cost reduction benefits. The system also aides in improved reliability and service quality, usually thought of as tools to retain good customers and grow market share and revenue and lastly there is improved shipment and container integrity, built around a core of security issues.

Respondents agreed that electronic cargo tracking system has enabled data to be captured on the system as evidenced by ( $M=3.5484$   $SD=1.31546$ ), this shows that electronic cargo tracking system has improved how data was captured on goods on transits among East African member states. The study findings agrees with Busse et al (2012) who argued that the electronic cargo tracking system offers a platform whereby data can be analyzed accurately and therefore KRA being able to generate useful insights into its operational performance and is done on a real time basis and therefore the information collected and circulated is timely and relevant. Similarly, an electronic system eliminates the paper works involved in the old ways of doing business.

Majority of respondents were neutral that electronic cargo tracking system ensures internal control systems are enhanced as shown by ( $M=3.3234$   $SD=0.59179$ ), this shows that electronic cargo tracking system has not fully improved the internal controls at boarder post, this has led to delays of cargo on transits. The study findings agrees with Calabrese & Eberhard-Ruiz, (2016) who argued that ECT system also has been associated with increased

quality of service and cost control which means that customers are willing to do business with the revenue authority and this leads to more trade and revenue collection.

Respondents were neutral that electronic cargo tracking system has reduced staffing cost as shown by ( $M=3.4476$   $SD=1.39304$ ), this shows that staffing cost was still a challenge at the border posts of East African Member states since the introduction of electronic cargo tracking system. The study findings agrees with Busse et al., (2012) who argued that The electronic cargo tracking system offers a platform whereby data can be analyzed accurately and therefore KRA being able to generate useful insights into its operational performance and is done on a real time basis and therefore the information collected and circulated is timely and relevant.

On whether electronic cargo tracking system has reduced documentation cost, majority of respondents were neutral as shown by ( $M=3.2823$   $SD=1.36800$ ), this shows that there's were still costs associated with the documentations on clearance of cargo at the border posts which has not been solved by electronic cargo tracking system. On whether electronic cargo tracking system has reduced the cost of tax collection, majority of respondents were neutral as evidenced by ( $M=3.2137$   $SD=1.30349$ ), this shows that there were still costs associated with tax collection since the introduction of electronic cargo tracking system. The study findings agrees with Calabrese & Eberhard-Ruiz, (2016) who argued that ECT system also has been associated with increased quality of service and cost control which means that customers are willing to do business with the revenue authority and this leads to more trade and revenue collection. Respondents were neutral that electronic cargo tracking system has reduced operational cost as evidenced by ( $M=2.8185$   $SD=1.19857$ ), this shows that electronic cargo tracking system has not all reduced operational cost at the border posts. The study findings agree with Calabrese & Eberhard-Ruiz (2016) who argued that when technology is used in repetitive operational tasks, there is a reduction in mistakes or complete elimination, and the time it takes to complete a task is greatly reduced.

On whether electronic cargo tracking system has helped curb revenue leakages, majority of respondents were neutral as shown by ( $M=3.4073$   $SD=1.44237$ ), this shows that there were some cases of revenue leakages at the border posts even after the introduction of electronic cargo tracking system. The study findings disagrees with Barka (2012) who argued that detection of tampering while on transit is done immediately and hence preventing loss before arrival at the unloading port. Monitoring of any change is registered by RFID signals from the truck associated with the opening of the container. Real-time reporting of any exception and incident of container security violation to destination custom and port authorities for remedial action before arrival is core issue.

Respondents were neutral that electronic cargo tracking system has improved targeted tax collections this was shown by ( $M=3.1452$   $SD=1.38057$ ), this shows that there has been little improvement in tax collection since the introduction of electronic cargo tracking system. the study findings disagrees with Calabrese & Eberhard-Ruiz (2016) who argued that ECT system also has been associated with increased quality of service and cost control which means that customers are willing to do business with the revenue authority and this leads to more trade and revenue

collection. This is because goods arrive at the border points and are quickly cleared to leave for the next station.

On whether electronic cargo tracking system has sealed loopholes for importers this was shown by (M= 3.0685 SD=1.28812), this shows that there were still loopholes for importers at the border posts which enabled tax evasion. The study findings agrees with Bennet (2014) who argued that with the implementation of the system, there is improvement in efficiency and effectiveness of operational performance. ECTS helps government agencies in enhancing enforcement of cargo handling regulations, maintaining the region as the preferred trade route for cargo and thereby improving tax collection by curbing incidents of dumping. Respondents were neutral that electronic cargo tracking system has improved monitoring transit cargo this was evidenced by (M= 2.9516 SD=1.32160), this shows that electronic cargo tracking system made little improvement monitoring transit cargo at the border posts. The study findings agrees with Barka (2012) who argued that monitoring of any change is registered by RFID signals from the truck associated with the opening of the container. Real-time reporting of any exception and incident of container security violation to destination custom and port authorities for remedial action before arrival is core issue.

Respondents who were neutral indicated that electronic cargo tracking system data is shared on a real time basis resulting to reduced dumping this was evidenced by (M= 3.1129 SD=1.29283), this shows that electronic cargo tracking system data was not fully shared on a real time basis which has not fully reduced dumping of goods. The study findings agrees with Barka (2012) who argued that Monitoring of any change is registered by RFID signals from the truck associated with the opening of the container. Real-time reporting of any exception and incident of container security violation to destination custom and port authorities for remedial action before arrival is core issue.

On whether revenue realization is a management system that measures revenue, respondents agreed as evidenced by (M= 3.8266 SD=1.21319), this shows that revenue performance has been accepted as a management system that measures revenue. Respondents agreed that electronic cargo tracking system has improved revenue performance as shown by (M= 3.9597

SD=1.12318), this shows that electronic cargo tracking system has improved revenue realization. On whether electronic cargo tracking system enhances Trade facilitation was evidenced by (M= 4.3105 SD=0.81577), this shows that electronic cargo tracking system had enhanced Trade facilitation. On whether electronic cargo tracking system has the advantage of expanding the revenue sources this was shown by (M= 3.8629 SD=1.06725),

#### IV. CONCLUSION

The study concluded that electronic cargo tracking system has not fully reduced time in cargo clearance. There has been reduction in cargo theft since the introduction of electronic cargo tracking system. Electronic cargo tracking system has improved how data was captured on goods on transits among East African member states. Electronic cargo tracking system has not fully improved the internal controls at boarder post; this has led to delays of cargo on transits.

Staffing cost was still a challenge at the border posts of East African Member states since the introduction of electronic cargo tracking system. There have been still costs associated with the documentations on clearance of cargo at the border posts which has not been solved by electronic cargo tracking system. There were still costs associated with tax collection since the introduction of electronic cargo tracking system. Electronic cargo tracking system has not all reduced operational cost at the border posts.

There were some cases of revenue leakages at the border posts even after the introduction of electronic cargo tracking system. There has been little improvement in tax collection since the introduction of electronic cargo tracking system. There were still loopholes for importers at the border posts which enabled tax evasion. Electronic cargo tracking system made little improvement monitoring transit cargo at the border posts. Electronic cargo tracking system data was not fully shared on a real time basis which has not full reduced dumping of goods.

#### V. PPENDICES

##### Appendix I: Introduction Letter

Date: .....

To Chief Executive Office

.....

##### NAIROBI.

Dear Sir/ Madam,

##### RE: CONSENT FOR PROVISION OF ACADEMIC DATA

I am an MBA student. I wish to conduct a study entitled “electronic cargo tracking system and its effect on revenue realization in East Africa Member Countries.”

To facilitate the completion of this study, I wish to humbly request for your assistance with certain data from your organization. I have attached a copy of the questionnaire. Kindly answer all the questions as completely as possible. The study results are intended for academic purposes only and will be treated with utmost confidentiality. No specific reference will be made on your organization and only the summary results will be made public.

I look forward to your utmost support and remain grateful.

**Appendix II: Questionnaire**

**PART A: BACKGROUND INFORMATION**

1. Gender of the respondent  
 Male  Female
2. Designation: .....
3. Number of Years in Service  
 0 – 5  6 – 10   
 11 – 15  16 – 20   
 Over 20 years
4. Highest Education Level Attained:  
 a) Diploma   
 b) Undergraduate   
 c) Postgraduate

**SECTION B: REVENUE REALIZATION**

a. Kindly indicate the extent to which the following on revenue realization using the scale: 1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree and 5- strongly agree. Please (√) as appropriate.

Aspects	5	4	3	2	1
Revenue performance is a management system that measures revenue					
Electronic cargo tracking system has improved revenue performance					
Electronic cargo tracking system enhances Trade facilitation					
Electronic cargo tracking system has the advantage of Expanding the revenue sources					

**SECTION C: OPERATIONAL PERFORMANCE**

A. With regard to effect of operational performance on revenue performance on East Africa Member Countries using the scale: 1- strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree and 5- strongly agree. Please (√) as appropriate.

Factors	5	4	3	2	1
Electronic cargo tracking system has reduced time in cargo clearance					
Electronic cargo tracking system has increased quantity of cargo cleared					
Electronic cargo tracking system has reduced cargo theft					
Electronic cargo tracking system has enabled cargo documents being processed online.					
Electronic cargo tracking system has enabled data to be captured on the system					
Electronic cargo tracking system ensures internal control systems are enhanced					

**SECTION D: COST**

A. In relation to effect of cost on revenue collection revenue performance on East Africa Member Countries using the scale: 1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree and 5- strongly agree. Please (√) as appropriate.

Factors	5	4	3	2	1
Electronic cargo tracking system has reduced staffing cost					
Electronic cargo tracking system has reduced documentation cost					
Electronic cargo tracking system has reduced clearance documentation cost					

Electronic cargo tracking system has reduced the cost of tax collection					
Electronic cargo tracking system has reduced operational cost					

**SECTION D: TAX EVASION**

A. On the effect of tax losses on revenue collection on revenue performance in East Africa Member Countries using the scale: 1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree and 5- strongly agree. Please (√) as appropriate.

Factors	5	4	3	2	1
Electronic cargo tracking system has helped curb revenue leakages					
Electronic cargo tracking system has improved targeted tax collections					
Electronic cargo tracking system has sealed loopholes for importers					
Electronic cargo tracking system has improved monitoring transit cargo					
Electronic cargo tracking system data is shared on a real time basis resulting to reduced dumping					

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