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The Strategic JOURNAL of Business & Change MANAGEMENT
ISSN: 2312-9492 www.strategicjournals.com
Vol. 8, Iss. 2, pp 64 – 74. April 23, 2021. www.strategicjournals.com, ©Strategic Journals

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Accepted: April 20, 2021

ABSTRACT

System automation is usually applied to improve customs performance. System automation plays a significant role in simplifying and harmonizing border and administrative procedures. It leads to enhanced efficiency and effectiveness in the customs system. This study sought to establish the effect of automation of cargo documentation on customer performance at The Port of Mombasa, Kenya. This study was founded on the unified theory of technical acceptance and use of technology. The study's target population constituted of 1500 Clearing Agents. The sample size of 306 was determined using Yamane formula. Simple random sampling was adopted to select respondents from the population. The main data collection instrument adopted for this study was the questionnaire which was self-administered to the respondents. The study found out that that improving automation of cargo documentation leads to improved customs performance ($\beta_1 = 0.276$; $p < 0.05$). It was also concluded that improving system automation will lead to improved customs performance at the port of Mombasa in Kenya. It was recommended that all systems between the Partner Government Agencies which include the Kenya Revenue Authority should be interconnected to improve Customs performance at the Port of Mombasa.

Key Words: *Automation, Cargo Documentation*

CITATION: Mumia, B. J. (2021). Effect of automation of cargo documentation on customs performance at the Port of Mombasa in Kenya. *The Strategic Journal of Business & Change Management,* 8 (2), 64 – 74.

INTRODUCTION

Information Technology (IT) is significant in simplification and harmonization of border and administrative procedures, hence facilitating trade. It has led to automation of customs procedures such as lodging entries, validating data, controlling cargo inventory, processing goods declarations, notifying clients about release, accounting for revenue and enforcement by customs (UNCTAD, 2006).

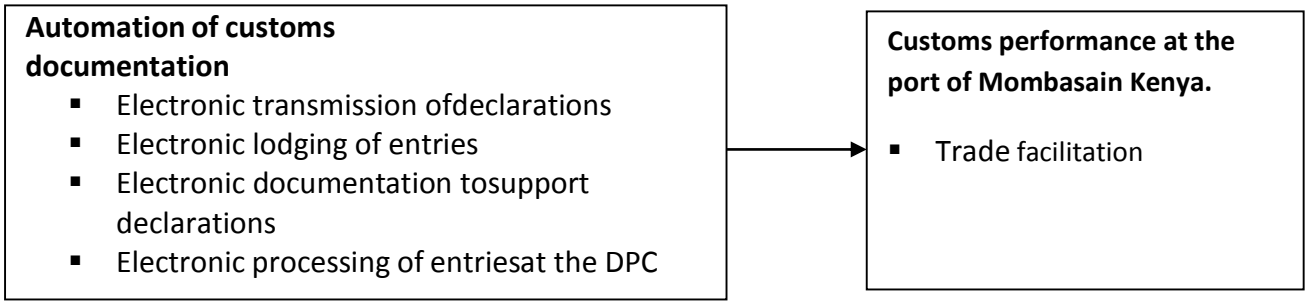
Applying ICT can lead to reduced waiting times at the borders and the ports, secure and appropriate fees and customs duties processing, simplification of formalities and provision of information to transport operators in time. ICT also results in reduced costs of transactions, enhanced capacities of supply and increased access to global markets (UNCTAD, 2006). ICT improves performance in revenue administration through: Provision of historical information that is readily available; reduction of expenses as well as processing errors and duration; enhancement of services to customers and voluntary compliance and consequently leading to growth revenue collected by government (Edwards-Dowe, 2008; Chatama, 2013). ICT application also diminishes the level of contact between taxpayers and staff involved in administration of revenue hence limiting any circumstances of rent seeking. Moreover, ICT is significant in facilitation of decision making (Edwards-Dowe, 2008; Chatama, 2013).

LITERATURE REVIEW

Unified Theory of Acceptance and Use of Technology

In 2003, Venkatesh, Morris, Davi and Davis developed the UTAUT, after identification and review of eight theoretical models that compete (Van Schaik, 2009). The theory argues that expectations about performance and efforts determine the use of technology (Venkatesh, Thong & Xu, 2013). Performance expectancy is the belief that using a system will lead to achievement of gains in performance of tasks (Van Schaik, 2009). Research based on UTAUT has continually grown because emergence of new information technologies (Sykes, 2015; Sykes, Venkatesh & Johnson, 2014) and citizens' e-government (Chan, Thong, Venkatesh, Brown, Hu & Tam, 2010).

Information technology has penetrated many aspects of the society, and is now used in various contexts by various individuals (Venkatesh et al., 2013). Applying the UTAUT to the study, it is implied that cargo documentation, customs release process and customs payment systems have been automated with expectations of improved customs performance. This theory was the basis of conceptualizing that automation of cargo documentation, automation of customs release and automation of payment system affects customs performance at the port of Mombasa in Kenya.



Independent Variable **Dependent Variable**

Figure 1: Conceptual Framework

Automation of Customs Documentation

Documentation process at the KRA customs department are automated, that is, transmission of declarations, lodging of entries, documentation to

The Strategic Journal of Business & Change Management. **ISSN** 2312-9492 (Online) 2414-8970 (Print). www.strategicjournals.com

support declarations and processing of entries at the DPC (KRA, 2017). Based on the business point of view, lodging entries electronically results in cost reduction by ensuring efficient customs administration as well as uniform application of laws, transparent duty and tax assessments and predictable times of clearance. Automation leads to reduced corruption through minimization of direct contact between officers of customs and traders. Moreover, the potential negative impact of physical inspection is also reduced significantly as a result of automation (UNCTAD, 2006). The first step in clearing cargo is the electronic transmission of declarations by the clearing agents to customs services, having obtained client information from clients through supporting documents. The next step is the lodging of entries against the electronically registered manifest by the shipping or airline agent (KRA, 2017).

Empirical Review

The studies reviewed were conducted in various countries of the world. Cantens, Raballand and Bilangna (2010) conducted a study on reforming customs through performance measurement in Cameroon. It was noted that there was significant reduction in corruption and clearance times significantly reduced, four months after installation of the Automated System for Customs Data (ASYCUDA). However, this study did not focus on the effect of system automation on customs performance measured by total costs for import- and export-related transactions, simplification of clearance process and identification and interdiction ofcargo of high risk.

James (2010) examined the impact that automation has on KRA customs clearing procedures in Kenya. It was established that the customs department reported improvement in efficiency, effectiveness, staff skills and governance as well as cost reduction due to the use of the Trade X-Simba system. However, this study did not focus on the effect of system automation on customs performance measured by port clearance time, transparency, simplification of clearance process and identification and interdiction of high-risk cargo. Serete (2015) examined the factors that affect clearance of containerized cargo at KPA. The study found out that there is a strong positive relationship between documentation process and clearance of container cargo at KPA. It was noted that the Single Window system curbs congestion at KPA.However, this study did not focus on the effect of system automation on customs performance measured by total costs for importation and exportation transactions, transparency, simplification of the process of clearing cargo and identification and interdiction of cargo of high risk.

Akbay (2009) studied computerization of foreign trade transaction in Turkey. It was noted that to enhance efficiency, the Turkish Customs Administration (TCA) initiated their electronic lodgment of cargo documentation program on November 2, 1999. It was established that upon implementation of the program, clearance times reduced significantly. The researcher noted that it was a clear sign that the reform eased the burden on traders between 1996-2000. However, this study did not focuson the effect of automation of cargo documentation on customs performance measured by total costs for import- and export-related transactions, transparency, simplification of clearance process and identification and interdiction of high-risk cargo.

Cheruiyot (2015) studied I-tax system and service delivery by Kenya Revenue Authority in Nairobi stations. It was noted that the perceptions of employees about technology significantly influences delivery of services to customers. It was also determined that the delivery of services to customers is improved significantly when users understand and have knowledge of the system of taxation and internet access. However, this study did not focus on the effect of automation of payment system on customs performance measured by port clearance time, total costs for import- and export-related transactions, transparency, simplification of clearance process and identification and interdiction of high-risk

cargo.

Alcedo and Cajala (2015) examined the present computerization program of the bureau of customs (BOC) in Philippines, focusing on import and export transactions. It was noted that there was unanimous agreement among respondents that that the perceived benefits of the BOC computerization program were attained. However, corruption was fairly eliminated. It was noted that respondents unanimously agreed that the computerization of the BOC was effective. The study also found out that import/export documentation was fairly effective. However, this study did not focus on the effect of automation of customs release process on customs performance.

Wondemagegne (2014) examined customs and revenue reforms in Ethiopia in the case of ASYCUDA++. It was noted that the adoption of ASYCUDA by Ethiopia Revenue Collection Authority (ERCA) led to simplification of the functions of the ERCA. However, this study did not focus on the effect of automation of customs release process on customs performance measured by port clearance time, total costs for import- and export-related transactions, transparency and identification and interdiction of high-risk cargo. Zhou and Madhikeni (2013) examined systems, processes and challenges of public revenue collection in Zimbabwe. It was established that electronic revenue systems increases business efficiency hence resulting in improvements in revenue collection. However, this study did not focus on the effect of automation of payment system on customs performance measured by port clearance time, total costs for import- and export-related transactions, transparency, simplification of clearance process and identification and interdiction of high-risk cargo.

METHODOLOGY

Descriptive survey research design was used in the study. Descriptive research enables the determination, description and reporting of the actual state of behaviours, attitudes, values and characteristics among others. The sample size comprised of 204 respondents selected through simple random sampling. Regression analysis was used to explain the effect of the independent variables on the dependent variable. The regression model adopted was as follows:

$$\mathbf{Y} = \beta_0 + \beta_1 \mathbf{X_1} + \varepsilon$$

Whereby; **Y** represents customs performance at the port of Mombasa in Kenya

β0 represents the y-intercept

β1, β2 and β3 represent coefficients of automation of cargo documentation, automation of customs release process and automation of payment system respectively

X1 represent the independent variables

ε represent error term

FINDINGS

Automation of Cargo documentation

As depicted in Table 1, the researcher analysed the opinions of the respondents on automation of cargo documentation.

Table 1: Descriptive Statistics for Automation of Cargo documentation

	N	Mean	Std. Dev
The transmission of declarations electronically to customsservices is fast	151	3.54	1.099
The electronic lodging of entries against the manifestregistered electronically is efficient	151	3.79	1.215
The electronic filing of supporting documents to supportdeclarations is convenient	151	3.70	.998
The processing of entries electronically at the documentprocessing centre is efficient	151	3.87	1.089

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The findings indicated that the respondents agreed that the processing of entries electronically at the document processing centre is efficient (mean = 3.87; std dev = 1.089). It was agreed that the electronic lodging of entries against the manifest registered electronically is efficient (mean = 3.79; std dev = 1.215). The respondents agreed that the electronic filing of supporting documents to support declarations is convenient (mean = 3.70; std dev = 0.998). The study determined that the respondents were in agreement that the transmission of declarations electronically to customs services is fast (mean = 3.54; std dev = 1.099).

Customs Performance at the Port of Mombasa in Kenya

As shown in Table 2, the opinions of respondents on customs performance at the port of Mombasa in Kenya were also scrutinized.

Table 2: Descriptive Statistics for Customs Performance

	N	Mean	Std. Dev
The time taken to clear cargo at the port of Mombasa has significantly reduced	151	3.69	.808
The total costs for import-and export-related transactions have significantly reduced	151	3.73	.883
The transparency in import- and export-related transactions at the port of Mombasa has increased	151	3.80	.910
The port clearance procedures are now simple	151	3.70	.874
The capacity for identification and interdiction of high-risk cargo at the port of Mombasa has improved	151	3.60	.730

The findings indicated that it was agreed that the transparency in import- and export- related transactions at the port of Mombasa has increased (mean = 3.80; std dev = 0.910). It was agreed that the total costs for import and export-related transactions had significantly reduced (mean = 3.73; std dev = 0.883). The respondents agreed that the port clearance procedures were now (mean = 3.70; std dev = 0.874). It was agreed that the time taken to clear cargo at the port of Mombasa had significantlyreduced (mean = 3.69; std dev = 0.808). There was general agreement among the respondents that the capacity for identification and interdiction of high-risk cargo at the port of Mombasa had improved (mean = 3.60; std dev = 0.730).

Relationship between Automation of Cargo documentation and Customs Performance

The relationship between automation of cargo documentation and customs performance at the port of Mombasa in Kenya was analysed by the researcher as revealed in Table 3.

Table 3: Correlation Analysis for Automation of Cargo documentation

		Customs performance
Automation of cargodocumentation	Pearson Correlation	.313**
	Sig. (2-tailed)	.008

It was found out that there is a positive and significant association between automation of cargo documentation and customs performance at the port of Mombasa in Kenya ($r = 0.313$; $p < 0.01$). It is implied that improved automation of cargo documentation of cargo is associated with improved customs performance and vice-versa.

Table 4: Regression Coefficients

Model		Unstandardized coefficients		Standardized coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.005	.381		-.013	.990
	Automation of Cargo Documentation	.276	.051	.427	5.381	.000

a. Dependent Variable: Customs performance

The findings indicated that automation of cargo documentation significantly predicts customs performance ($t = 5.381$; $p < 0.05$). The null statistical hypothesis that automation of cargo documentation has no statistically significant relationship with customs performance at the port of Mombasa in Kenya was rejected. Therefore, a significant relationship exists between automation of cargo documentation and customs performance at the port of Mombasa in Kenya. These findings concur with findings of a study by Serete (2015) which noted that there is a strong positive relationship between documentation process and clearance of container cargo at KPA. The findings also agreed with findings of a study by Akbay (2009) which noted that with the electronic lodgment of cargo documentation program, clearance times reduced significantly in Turkey.

The results of the t-test of individual regression coefficients clearly depict that the three independent variables and the constant would be included in the regression equation as they were significant ($p < 0.05$). The regression function shown in Equation 4.1 was used to explain the results of multiple regression analysis.

$Y = -0.005 + 0.276X_1 + \varepsilon$……Equation 1

The findings indicated that improving automation of cargo documentation by 1 unit enhanced customs performance by 0.276 units.

CONCLUSIONS AND RECOMMENDATIONS

The study established that there was agreement among respondents that the processing of entries electronically at the document processing centre is efficient. It was agreed that the electronic lodging of entries against the manifest registered electronically is efficient. The respondents agreed that the electronic filing of supporting documents to support declarations is convenient. The study established that the respondents were in agreement that the transmission of declarations electronically to customs services is fast. The study determined that automation of cargo documentation positively and significantly affects customs performance at the port of Mombasa in Kenya ($r = 0.313$; $p < 0.01$). It was determined that improving automation of cargo documentation leads to improved customs performance ($\beta_1 = 0.276$; $p < 0.05$).

There were several conclusions that were made in respect of the study findings and in line with study objectives. This study concluded that automation of cargo documentation positively and significantly affects customs performance at the port of Mombasa in Kenya. It was also concluded that automation of customs release positively and significantly affects customs performance at the port of Mombasa in Kenya. The researcher also concluded that automation of payment system positively and significantly affects customs performance at the port of Mombasa in Kenya. It was also concluded that improving system automation will lead to improved customs performance at the port of Mombasa in Kenya.

The researcher made a number of recommendations. Firstly, this study recommended that KRA and other stakeholders at the port of Mombasa in Kenya such as KPA should enhance the automation of cargo documentation in order to improve customs performance. Secondly, this study recommended that the automation of customs release should be improved in order to enhance

customs performance. Thirdly, the researcher recommended that automation of payment system should be enhanced in order to improve customs performance.

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