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The Relationship between Organizational Characteristics and Performance African Ports: The Moderating Effect of Governance Reforms

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Abstract

The main objective of this study was to determine the moderating effect of governance reforms on the relationship between organizational characteristics and the performance of seaports in Anglophone Africa. This study adopted a positivist research philosophy with a descriptive cross-sectional census survey design. Structured questions in the form of questionnaires were employed to collect primary data targeting executive managers of container-handling seaport terminals in Anglophone Africa who are conversant with port operations and management. Some data was also obtained from the websites of the ports. The response rate was 83.6%. Out of these respondents, ports that were found to have adopted the landlord model were 78%, while 22% were still using the public service model of operations. The reliability and validity of the indicator items were ascertained through diagnostic tests. Model fitness was confirmed by the use of SRMR and NFI. Partial Least Squares Structural Equation Modelling (PLS-SEM) using Smart PLS 4.0 software was used for data analysis and measurement model estimation to test the hypothesis that there is no significant moderating effect of governance reforms on the relationship between organizational characteristics and the performance of seaports in Anglophone Africa. The findings established a positive and significant moderating effect of governance reforms on the relationship. The study concluded that the landlord model of governance reforms enhances performance thereby creating a competitive advantage for ports in Anglophone Africa. The study also finds that seaports in Africa are now increasingly identifying with the understanding of port governance reform models seen from both theoretical and empirical points of view.

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The study recognizes that the landlord model of port governance is already predominant amongst African seaports and concludes with the recommendation that all African seaports that are still operating as public service ports should reform and adopt the landlord model to achieve remarkable performance.

Keywords: Organizational characteristics; Governance reforms; Partial least squares structural equation modeling; Container handling terminal; Measurement model estimation; Landlord model.

1. Introduction

Given the present competitive situation for many firms, managers must identify and understand the characteristics that are critical for achieving acceptable levels of sustainable performance [1, 2]. Organizational characteristics are proven to explain an organization's general performance in several ways, and hence recognizing them becomes necessary while considering the development of a new institution, expanding an existing one, and improving its performance, market share, and growth [3]. The definition of organizational performance and its measurement continues to compound scholars due to its complexity. In this regard, the concept of performance needs to be clearly understood [4]. Governance reforms have progressively been adopted by seaports intending to enhance organizational performance albeit with mixed results that require further validation.

The natural resource-based view (NRBV), the dynamic capabilities theory (DCT), the agency theory, and the stakeholder theory offer explanations and information on the anchorage of this study. The NRBV and DCT explain the organizational characteristics and performance. The NRBV focuses on new contexts where organizations have established new capabilities, like eco-innovations, and new management tools like governance reforms which enable ecologically maintainable performance [5]. DCT accounts for the sustenance of competitive advantage by building new resources and capabilities. The Agency theory explains the governance structure of organizations where shareholders delegate power to an agent to exercise control of an organization on their behalf. The equity holders expect the agent to run the organization in their very best interests which may include adopting new governance reform models and integration of stakeholders concerns [6].

Seaports act as interfaces between interlinking modes of transport including maritime, rail, road, and inland waterways. According to [7], ports from developing countries command 72 percent of world container trade out of which African share is only one percent. The main challenges facing African ports are inefficient operations, lengthy cargo clearing and dwell times, inadequate port and hinterland infrastructure; lengthy documentation processes, and low levels of automation. Utilization of technology by seaports for productivity has led to a 36 percent higher profit than competitors. The forum of [8], recommended measures that if implemented would improve the performance and competitiveness of African seaports which included among others, improved public investment structure, eradication of operational inefficiencies, and ambitious governance reforms to mobilize and attract public-private partnerships for financing port development [9]. The motivation behind this study was to respond to the concerns regarding poor performance by the majority of seaports in Africa in comparison to well-established seaports in the developed world and the desire to find a solution to the problem. Furthermore, the fact that some of the seaports had undergone governance reforms but had not shown any considerable performance improvement needed to be explained. The research attempted to unravel the cause of inferior performance as cited

in these scenarios and especially the effect of governance reforms on the relationship between the port characteristics and performance of seaports in Africa. The aim is to achieve high productivity and sustained performance [10].

2. Literature Review

2.1 Organizational Characteristics

Organizational characteristics refer to aspects of the organizations that can be identified particularly concerning performance. These characteristics are present in the form of internal and natural environment resources of the organization. These characteristics include size, age, ownership, and diversification [11, 12]. Studies by [1, 2] also identified some determinants of performance such as organization's size, infrastructure, age, strategic location, information communications technology (ICT), efficiency level, costs, reliability, and the region's economic expansion. The size of a firm can be measured in terms of its physical size, number of employees, and production equipment that it has. Studies have indicated that large-sized firms tend to give better performance than smaller ones [11]. They add that the age of an organization and the many years of experience may result in a higher possibility of better industry performance. [13] aver that a long period of existence enables the firm to build resources and capabilities that may lead to enhanced performance. Strategic location refers to proximity to the main trade routes by sea, air, rail, and road with highly efficient infrastructure. Close proximity of an organization to these resources is a catalyst for higher performance [14]. Organizations that lack the advantage of strategic location can leverage efficiency and technology to enhance performance [2]. Infrastructure refers to the size and quality of an organization's internal capability. In a seaport environment, it refers to the quality of physical structures like berths, draught, yards, quays, equipment, and road and rail infrastructure for entry and evacuation of cargo [15]. Costs of production and transport, contribute towards an organization's charges and are known characteristics of performance because costs of goods and services are a matter which users will reflect when choosing goods and services which are similar. Reliability of services, efficiency, and good reputation are other factors that give rise to better performance. Some customers would be willing to pay slightly more for efficiency Reference [16].

2.2 Governance reforms

Governance is the structure of practices, guidelines, and procedures through which an organization is controlled and directed [17]. Governance reforms refer to the embracing and application of new rules central to conducting and exercising authority and organizational assets to manage and accomplish an organization's events principally matching the wishes of stakeholders to the advantage of society and the economy. The reforms concern both private and public sectors but the application is different depending upon whether private or public concerns are at stake. Its doctrines apply to relationships among organizations, public-private agencies, businesses, stakeholders, and those who inaugurate them to carry out activities on their behalf [18]. The intended objectives of governance reforms in the public sector were to enhance and sustain performance. Studies have shown that the reforms did not always achieve their intended purpose as some well-managed public sector organizations did better than some of those that had been reformed. In other cases, the type of reform model that was adopted is what made the

difference in performance levels [19].

Due to prevailing imperfect prototype governance reform models, [20] introduced reform toolkits to be used by organizations to guide reforms namely, the Landlord model, where the public retains ownership and regulation while management remains in private hands; the Public Service model in which the organization retains ownership of all the assets including land but is also the regulator and operator; the Tool model where the organization owns, maintains facilities and equipment but operations is done by private parties and lastly the Private Service model where the organization owned and operated by private companies. The distinction and separation depend on who owns infrastructure, and who manages and provides services. The governance reform models became more useful to organizations after year 2008 world economic meltdown. Decision-makers implemented new governance reform models and management structures to positively adapt to changing environments through a procedure similar to other economic events [21. Evolving circumstances arising from the governance reforms affect market dynamics and stakeholders' relations [22].

2.3 Organizational Performance

Organizational performance is about efficiencies and effectiveness in the use of an organization's possessions and the attainment of its targets [4, 23]. Good performance indicates institutional effectiveness and competence in utilizing its capital as a contributor to the economy of a nation [24]. Organizational performance involves the real output or outcome of an organization when compared to the anticipated outputs. The performance of organizations concerns various experts in the fields of strategic planning, finance, legal, operations, and corporate development Reference [25]. According to [26], organizational performance incorporates three precise zones of organizational outcomes namely product market performance (sales, market share, etc.); financial performance (incomes, return on capital, return on shares, etc.), and operational performance. Performance appraisal is requisite for the growth of any economic activity. They further state that performance should be measured through a yardstick since companies' performances have to be equated with each other for comparative purposes. According to [7], most performance measurements can be classified as either efficiency, effectiveness, timeliness, quality, or productivity. Performance measurement estimates the parameters under which programs, investments, and acquisitions achieve targets [25] (Perez, Gasquez-Abad, Martin-Carillo & Fernandez, 2007). In the context of seaport terminals, performance measures are identified as berth cargo throughput, operational efficiency level, crane moves per hour, truck turnaround time, vessel turnaround time, terminal charges, and vessel and truck turnaround which are crucial factors of performance for terminal operators [27].

2.4 Organizational Characteristics and Performance

From previous literature, there exists empirical evidence and academic explanations that support the positive and significant effect of organizational characteristics on organizational performance. From research already done, it is common knowledge among researchers, practitioners, and managers that full exploitation of organizational characteristics improves performance and what tends to vary is the combination of the factors which tend not to be always similar. For example, some studies found positive relationships between organizational size and age as great factors for financial performance [28], others found infrastructure and ICT as catalyzers for enhanced

performance [1] while others found strategic location and size as the causes of high performance [29, 30], while others researchers did not find any clear relationship between these variables [32, 33], they concluded that performance improvement arose from improved efficiency arising from increased use of ICT in operations and supply chain networks. Other studies showed that the size of an organization increased productivity due to the economics of scale [30, 34, 35], other studies found a learning effect in large-sized organizations that improved performance [36, 37, 38]. Other studies by [39,40] contradicted these findings indicating that smaller-sized organizations were more competitive with higher performance than the larger ones due to improved efficiency hence raising a raging debate.Previous studies also identified infrastructure as another factor of performance [31, 30, 41] but other scholars [42, 43] contradicted these findings as they found that equal levels of investment in infrastructure did not always yield the same levels of improvement in performance indicating that further studies were required on the role of other factors like location, intermodalism and others. Studies by [44] identified costs as another factor of organizational performance. However, [41, 45] found that customers did not mind paying higher charges if an organization portrayed a higher level of efficiency and exhibited effectiveness in performance. The role of organizational characteristics on performance continues to raise a debate hence the need for further empirical validation specifically in the context of seaports in Africa.

2.5 Organizational Characteristics, Governance Reforms and Performance

Empirical evidence exists to confirm that organizational characteristics influence organizational performance [30]. It is the role that governance reforms play in the relationship that has compounded researchers in the past. The agency theory represents governance reforms in this study as it endeavors to explain the gap between shareholders and directors where control and proprietorship have been separated. [46] Means (1932) argues that managers as agents might use the company's assets for their interests, which eventually leads to a conflict between the owners and agents. The role of shareholders is limited to maximization of their returns while the role of directors is limited only to monitoring the managers' performance. Governance reforms and stakeholders' management are targeted at mitigating some of these agency issues to enhance organizational performance [47] He says that governments have delegated responsibility to manage seaports to PAs who have carried out reforms on behalf of the governments to improve performance. This requires strategic leadership and is anchored on the agency theory [48].

There is evidence that stakeholder theory has in the recent past been utilized in studies involving the governance of ports, ([49, 50]. From the literature review undertaken, studies have shown that seaport performance is influenced positively by reforms in port governance structures. However, a number of these studies indicate that there is still little evidence of the best model of governance reforms despite the popularity of the landlord model [48,50,51]. Whereas [30, 36] argued that it was specific characteristics that led to improved performance in each context of the study, [38, 35] disagreed and argued that it was the type of governance reforms model and type of management structure that improved performance. This view was given credence from studies by [53, 54, 55, 56] whose studies in Mexico, Australia, Italy, and China found that governance reforms especially the landlord and corporatization models directly improved performance. These findings were however contrasted by [57] who found that reforms could be undermined by inefficient governance structures and conflicting decision-making processes. Another contrasting view came from [58] who found that governance reforms led to industrial disputes, price increases, and

poor performance. Studies by [39] found that full privatization would not guarantee better performance unless it is a combined mix of private management and public ownership.

The concept of a full public service port has been retained in Taiwan where port ownership and operations remain in the Port Authority's control [59]. However, the annual report by [7] stated that the productivity level of these ports is lower than those of the landlord ports despite their heavy investment in new infrastructure. According to [21,51], past studies have demonstrated that little proof exists of the best and most preferred governance reform practice for seaports since there have been varying experiences of different governance reform models in different parts of the world. [39] suggested that privatization in its totality has not been proven to assure higher levels of efficiency but rather a collective blend of private and public proprietorship and private management that guarantees higher performance. This view supported [60] that fully privatized UK ports did not meet the expected improved efficiency compared to publicly owned and managed ports. In contrast, [54] recognized that the full privatization of ports in Australia had positive and general productivity and financial performance enhancements. On the other hand, [61] found that the corporatization model of reforms had succeeded in China and Netherlands which generally demonstrated higher profit margins after undergoing reforms through corporatization. These mixed results in the literature present a research gap. The raging debate and disagreements called for further research and empirical validation. Based on the above the study hypothesized that governance reforms have no significant moderating effect on the relationship between organizational characteristics and the performance of seaports in Anglophone Africa.

2.6 Conceptual Framework

The conceptual Framework was developed based on the literature review and theoretical groundwork. It was proposed that Governance reforms moderate the relationship between organizational characteristics and organizational performance. Organizational characteristics had location, size, information communications technology, infrastructure, maritime services, and hinterland connectivity. Governance reforms were measured using impact on investment, productivity impact, and impact on efficiency. The indicators for organizational performance were operational performance, financial performance, and market share performance.

H_1: Governance reforms have no significant moderating effect on the relationship between organizational characteristics and the performance of seaports in Africa.

3. Methodology

Positivist philosophy was adopted in the testing of the resultant model. Similarly, a descriptive cross-sectional census survey research design was preferred to accommodate a low population of only 54 seaports in Anglophone Africa. The design chosen was considered suitable where the aim is to reveal the relationships between variables at a specific point in time [62]. Data was collected across targeted seaport terminals essentially at the same point in time. Previous studies have successfully adopted this research design using PLS-SEM for analysis [63, 64]. The study targeted all container handling seaports in Africa where English is the language of management. Data was collected by use of structured questionnaires which were sent by email to executives of the targeted seaports,

secretariats of regional port management associations, and also from the websites of the seaports. This research applied Partial Least Squares Structural Equation Modelling (PLS-SEM) in analyzing the data. PLS-SEM is a soft modeling technique that does not make assumptions about the distribution of the data and is the best alternative to CB-SEM when dealing with small samples [65].

Diagnostics tests of normality, multicollinearity, autocorrelation, and heteroscedasticity were carried out on all the models of the study to determine whether the data collected met the threshold for further analysis. In the test of normality, the Shapiro-Wilk test showed an arrangement between 0.983 ($p = 0.931$) for stakeholders' management and 0.983 ($p = 0.968$) for organizational performance. All the p-values from Shapiro-Wilk's test displayed insignificant outputs on all the latent variables and therefore confirmed the normal distribution of the data [66].

Test for multicollinearity was carried out using variance inflation factor (VIF) for checking the correlation and the correlation weight between exogenous variables in a model of regression. The VIF values varied between 1.001 for organizational characteristics and 1.126 for stakeholders' management as proof that there was no correlation between the exogenous variables in the models [67]. The tolerance values between 0.888 and 0.999 implied that there was no threat of multicollinearity. [68], advocates for a value of tolerance above 0.2 to indicate a lack of multi-collinearity.

The Durbin-Watson test was done to check autocorrelation and the findings confirmed that there was no autocorrelation between successive observations in the collected data for all three latent variables. The Koenker test was used for carrying out the heteroscedasticity tests for the models. In this test, the p-value had to be greater than 0.5 to ascertain that heteroscedasticity was not present. The results showed that p values for LM tests for the three models ranged from 0.626 to 0.996 a confirmation of the statistical insignificance of the models since the values were larger than 0.05 thus confirming the lack of occurrence of heteroscedasticity [69].

In summary, all the diagnostics tests of normality, collinearity, autocorrelation, and heteroscedasticity determined that the data that was collected for all the variables met the threshold required for further analysis. It was therefore necessary to carry out Kaiser-Meyer-Olkin (KMO) and Bartlett's analysis to examine the ability to carry out exploratory factor analysis (EFA) of all items of the latent constructs. The KMO checks revealed that all items were highly significant and equal to or above the threshold of 0.6 [70]. Bartlett's Test findings showed that chi-square values for all the latent constructs were significant as the value of p was 0.001 [71]. The findings in Table 1 imply that it was appropriate to render all the items signifying the latent variables for EFA.

Table 1: KMO and Bartlett test results

Objectives variables	KMO-Bartlett Value	Chi-square	Df	Sig
Strategic Location	.731	97.904	3	.001
Size	.628	48.869	3	.001
Information Communications Technology	.741	89.916	3	.001
Infrastructure	.668	89.674	3	.001
Maritime Services	.764	104.66	3	.001
Hinterland Connectivity	.694	43.887	3	.001
Investment Impact	.596	9.575	3	.001
Impact on Productivity	.388	13.316	3	.001
Efficiency Impact	.698	34.511	3	.001
Operational Performance	.651	27.883	3	.001
Financial Performance	.783	112.483	3	.001
Market share performance	.649	60.225	3	.001

4. Results

4.1 Reliability and validity test results

The objective of the study was to determine if governance reforms had any moderating effect on the relationship between organizational characteristics and the performance of seaports in Anglophone Africa. Questionnaires were sent out to 54 seaport terminals out of which only 46 eventually responded, thus a response rate of 83.63%. The collected data was cleaned, edited, coded, and then entered into SPSS for descriptive and inferential statistics tests including exploratory factor analysis to assess their factorability. The latent variable organizational characteristics comprised six sub-constructs each with three items per indicator. These were strategic location, size, information communications technology, infrastructure, maritime services, and hinterland connectivity. Stakeholder management comprised of three sub-constructs namely investment impact, impact on productivity, and efficiency impact. The dependent variable organizational performance had three sub-constructs operational performance, financial performance, and market share performance which had 3 indicators save for financial performance which had six indicators.

The statistical analysis was approached through the outer model estimation to determine the link between the observable variables and the hypothetical constructs denoted by them and also by specifying the structural model evaluating the proposed relationships and testing the hypothesis [72]. All the correlations between the observed variables and their respective indicators were postulated in the measurement model that outlines how each group of indicators is aligned to their corresponding latent constructs. The observed variables were highly interchangeable and correlated and were therefore reflective and therefore underwent analysis for reliability and validity [65, 73]. All three constructs had a total of 12 indicators which were subjected to confirmatory factor analysis as part of the PLS-SEM outer model assessment.

The variables were checked meticulously for reliability, validity, and unidimensionality by conducting confirmatory factor analysis (CFA) using PLS-SEM using Smart PLS4.0 software to assess the relationship between the latent variables to determine the predictive potential of the conceptual model for the seaports in Anglophone Africa. PLS-SEM is a statistical software that assesses the psychometric properties of the measurement models and parameter estimates of the structural model and is most suited for estimating a research objective where the sample size is below 100 [73]. Table 2 illustrates the descriptive statistics for all the latent constructs in the outer model with results showing that data for all the variables are fairly normal as values for kurtosis and skewness fall within the range of -1 and +1, except for kurtosis of size. All variables were therefore seen as composite.

Table 2: Descriptive statistics for measurement scale

Latent Construct	Indicator	Mean	SD	Skewness	Kurtosis
Organizational Characteristics	Strategic Location	3.01	.707	-.499	-.932
	Size	3.12	.452	.473	1.155
	Information Communications Technology	3.49	.906	-.338	-.534
	Infrastructure	3.79	1.12	-.720	-.352
	Maritime Services	2.92	.869	-.337	-.746
	Hinterland Connectivity	3.24	.663	.559	-.303
Governance Reforms	Investment Impact	3.92	.467	-.414	.712
	Effect on Productivity	3.13	.647	-.414	-.288
	Impact on efficiency	3.21	.457	-.187	-.231
Organizational Performance	Operational Performance	3.24	.862	-.068	-.277
	Financial Performance	2.89	.454	.671	.284
	Market Share Performance	2.62	.749	.657	.577

Regarding outer model reliability, Table 3 shows that all of the indicators of the latent constructs in this model had individual indicator reliability values that were greater than the 0.5 threshold, with the majority above 0.7 [73]. Bootstrapping results showed that all factor loadings are significant as p-values are less than 0.05 and their t-statistics greater than 1.96. Therefore, all the outer model loadings were highly significant.

Table 3: Reflective outer model reliability

Latent Variable indicator	Loadings	Indicator reliability	T Statistics	P Values
Strategic Location	.816	.955	5.437	.001
Size	.803	.885	3.791	.001
Information communications technology	.892	.835	1.998	.001
Infrastructure	.894	.836	5.176	.001
Maritime services	.870	.837	5.658	.001
Hinterland connectivity	.729	.855	2.593	.001
Investment Impact	.525	.833	1.974	.001
Impact on productivity	.998	.713	1.968	.001
Efficiency impact	.812	.696	1.509	.001
Operational performance	.853	.769	4.183	.001
Financial performance	.682	.784	3.819	.001
Market share performance	.783	.709	5.920	.001

Internal consistency reliability was ensured through composite reliability scores which were obtained from PLS-SEM output. From Table 4, it is observed that the values of composite reliability scores range from 0.809 for stakeholders' management to 0.929 for organizational characteristics and thus for the three latent constructs were greater than the threshold of 0.6 [74]. In addition, Cronbach's Alpha values range from 0.696 to 0.913 against the threshold of 0.7 confirming internal reliability [75]. The results therefore confirm that there was a high level of internal consistency reliability for the constructs [76].

Table 4: Construct reliability and validity of latent constructs

Latent Variable	Composite reliability	Cronbach's Alpha	AVE	√AVE
Organizational characteristics	.997	.913	.699	.836
Governance Reforms	.921	.983	.645	.803
Organizational performance	.773	.696	.602	.775

Convergent reliability was tested by observing the average values extracted (AVE) for all three latent constructs obtained from the PLS-SEM analysis in Table 4. The results revealed that all the AVE values range between 0.602 for organizational performance and 0.699 for organizational characteristics and these values are all greater than the threshold of 0.5 [76]. In addition, from the confirmatory factor analysis results obtained from PLS-SEM output displayed in Table, all the indicators of the latent constructs loaded more heavily onto the corresponding latent variables as a further confirmation of convergent validity.

Table 5: Confirmatory factor analysis

Indicator	Organizational Characteristics	Governance Reforms	Organizational Performance
Strategic Location	**.816**	.208	.662
Size	**.803**	.014	.545
Information communications. Technology	**.892**	.371	.699
Infrastructure	**.894**	.311	.590
Maritime services	**.870**	.371	.661
Hinterland connectivity	**.729**	.084	.515
Investment impact	.195	**.525**	.322
Impact on productivity	.117	**.998**	.253
Efficiency Impact	.077	**.812**	.154
Operational performance	.577	.298	**.853**
Financial performance	.148	.168	**.682**
Market share performance	.395	.207	**.783**

Before evaluating discriminant validity, it was necessary to establish the Pearson correlation matrix for the three latent variables in the model. The findings of Pearson's correlation coefficients of the variables ranged from 0.460 for operational performance correlation with organizational characteristics to 0.653 for governance reforms correlation with organizational characteristics as displayed in Table 6.

Table 6: Pearson's correlation matrix

Latent Variables		OC	GR	OP
Organizational characteristics	(OC)	1		
Governance reforms	(GR)	.653	1	
Organizational performance	(OP)	.460	.509	1

Discriminant validity was evaluated by use of the Fornell-Larcker criterion, and confirmed by the Heterotrait-Monotrait Ratios (HTMT) and factor loadings and associated constructs. The measurements were done to ascertain that the three latent variables organizational characteristics, governance reforms, and organizational performance were as much as possible unrelated. The results of the Fornell Larcker criterion in Table 6, show that the square root of the AVE for organizational characteristics (0.699) was 0.836. This figure was greater than the score of correlation for the organizational characteristics column of (0.653, 0.460) in Table 5. The square root of AVE (0.645) for governance reforms was 0.803. This was also greater than the correlation score of 0.509 in the column of governance reforms. Discriminant validity was therefore confirmed by these results as recommended by Reference [77].

Table 7: Fornell-Larcker analysis results

Latent Variable	Organizational characteristics	Governance reforms	Organizational performance
Organizational characteristics	0.836		
Governance Reforms	0.653	0.803	
Organiz6tional performance	0.460	0.509	0.775

To confirm if the latent variables were unrelated, the HTMT ratios obtained from PLS-SEM output for the correlation of organizational characteristics and governance reforms was 0.289, the correlation between organizational performance and governance reforms was 0.338, and the correlation between organizational performance and organizational characteristics was 0.826. All these scores were below the maximum limit of 0.9 as specified by [77] to confirm discriminant validity as shown in Table 7.

Table 8: Heterotrait-monotrait ratios

Hypothesized path relationship	HTMT Ratio
Organizational Characteristics -> Governance Reforms	.289
Organizational performance -> Governance Reforms	.338
Organizational performance -> Organizational Characteristics	.826

4.2 Predictive Relevance and model fit

The predictive relevance measure, Q^2 [79, 80] which was obtained from PLS-SEM output was 0.220. [73] suggested a Q^2 score of 0.02 displayed a small relevance, 0.15 medium relevance, while 0.35 demonstrated a large predictive relevance of an exogenous construct. Therefore, the predictive relevance of this model falls midway between medium and large. For the overall model fit, the SRMR value from PLS-SEM was 0.103. This was marginally higher than 0.1 while the NFI value was 0.767 against maximum 0.9 for the best fit [85]. These small variations were due to a small sample size [84]. The combined SRMR and NFI results indicated that the model was well constructed [81, 82]. A bootstrapping procedure with 500 resamples was carried out to establish the model's statistical significance which was confirmed as all p-values were below 0.05.

Table 9: SRMR composite model statistics

Original Sample	Sample Mean	Standard error	T Statistics	P value
0.103	0.103	0.0715	3.253	0.018

4.3 Model Path Diagram

Governance reforms were hypothesized to moderate the linkage between organizational characteristics and organizational performance as shown in Figure 1. In PLS-SEM analysis organizational characteristics were represented by OC which has a strategic location (B1), size (B2), information communications technology (B3), infrastructure (B4), maritime services (B5), and hinterland connectivity (B6). Governance reforms were displayed as GRLM which was represented by investment impact (C4), impact on productivity (C5), and efficiency impact (C6). Organizational performance was displayed as OP, which was represented by operational performance (E1), financial performance (E2), and market share performance (E3).

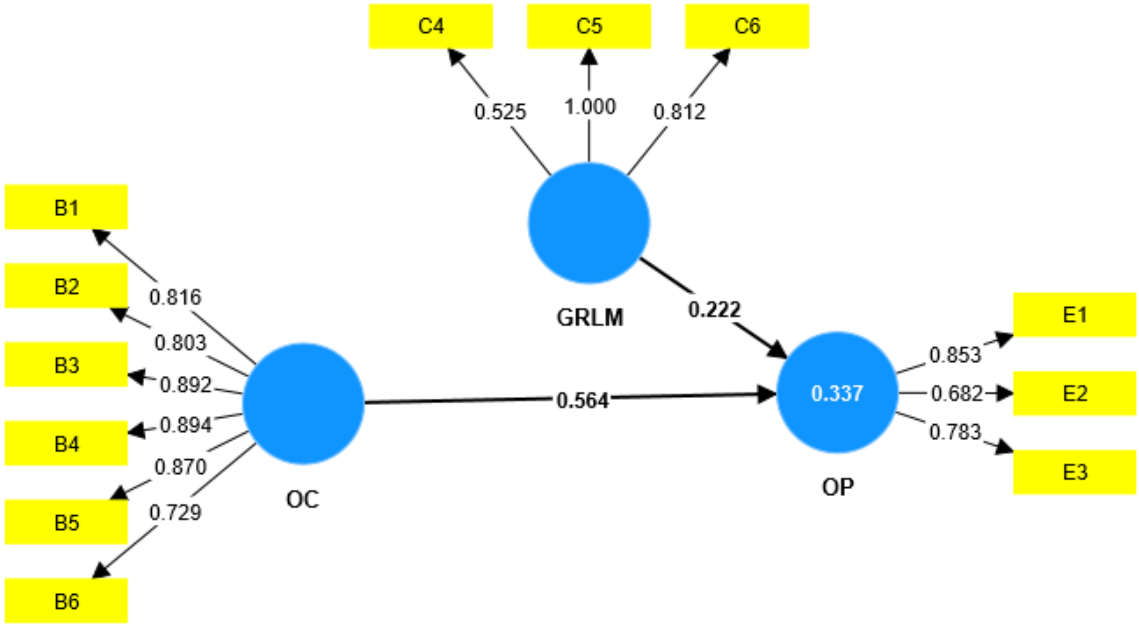

Figure 2: Structural equation modelling path diagram showing the effect of governance reforms on the relationship between organizational characteristics and performance

4.4 Variance of Endogenous Variable and Path Coefficient Significance

From the path diagram Figure 1, it is observed that the coefficient of determination, R^2 attributed to organizational performance was 0.337. This implied that organizational characteristics and governance reforms explained 33.7% of the change in organizational performance. [86] state that values of R^2 of 67 percent, 33 percent, and 19 percent represent large, medium, and low variance in that order. It is concluded that the variance that organizational characteristics and governance reforms account for in organizational performance, was marginally above medium.

Information from Figure 2 shows the postulated correlation of the path between organizational characteristics and organizational performance (β=0.564, t=5.527, p = 0.001) is statistically significant since p is less than 0.05 while the value of t is more than 1.96. Likewise, the path correlation between governance reforms and organizational performance (β = 0.222, t = 2.586, p = 0.016) is also significant as the value of p is less than 0.05 and t is more than 1.96. The statistical significance was confirmed through a bootstrapping procedure of PLS-SEM analysis.

The Null hypothesis was not supported since the p-value was less than 0.05. Therefore, there is significant moderating effect between organizational characteristics and performance of seaports in Africa.

4.5 Effect Size

The effect sizes f^2 shown in Figure 2, were also obtained from PLS SEM output for organizational characteristics was 0.473, while that of governance reforms was 0.073. [87] proposed effect sizes of 0.025, 0.01, and 0.005 representing substantial, moderate, and small effect sizes respectively. The results therefore indicated that the effect sizes for organizational characteristics and governance reforms were all substantial since they were all above 0.025 [87].

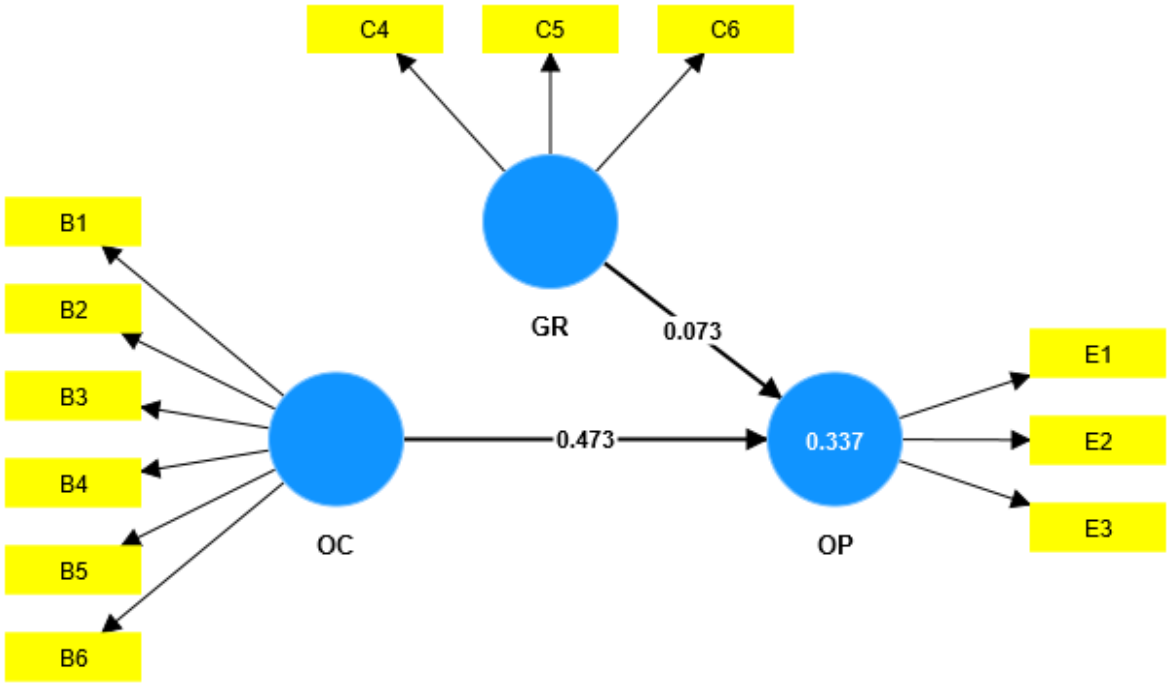

Figure 3: Structural equation modelling path diagram showing the effect sizes and statistical significance

4.6 The Moderation Effect

Figure 3 the impact of governance reforms as a moderator on the correlation between organizational characteristics and organizational performance. The moderation effect was carried out using a two-stage approach. [88] advocate for a two-stage method if the main intention is to measure the effect of moderation's significance. It is preferred because it results in higher statistical power in comparison to other methods.

Information from Figure 7 reveals that the effect of moderation's value is -0.042 while the impact of organizational characteristics on performance was 0.564. The explanation is that the association between organizational characteristics with organizational performance is 0.564 for a regular level of governance reforms. However, when governance reforms are enhanced by one standard deviation, the link between organizational characteristics to organizational performance decreases by the impact of interaction [thus 0.564 + (-0.042) =

0.522].

Alternatively, if governance reforms are reduced by a standard deviation, the link between organizational characteristics and organizational performance increases by the effect of interaction [i.e., 0.564 – (- 0.042) = 0.606]. It can also be observed that after applying the moderating effect, the R^2 value increased marginally from 0.337 to 0.339 while the path coefficient between governance reforms and organizational performance decreased marginally from 0.222 to 0.218 after moderation.

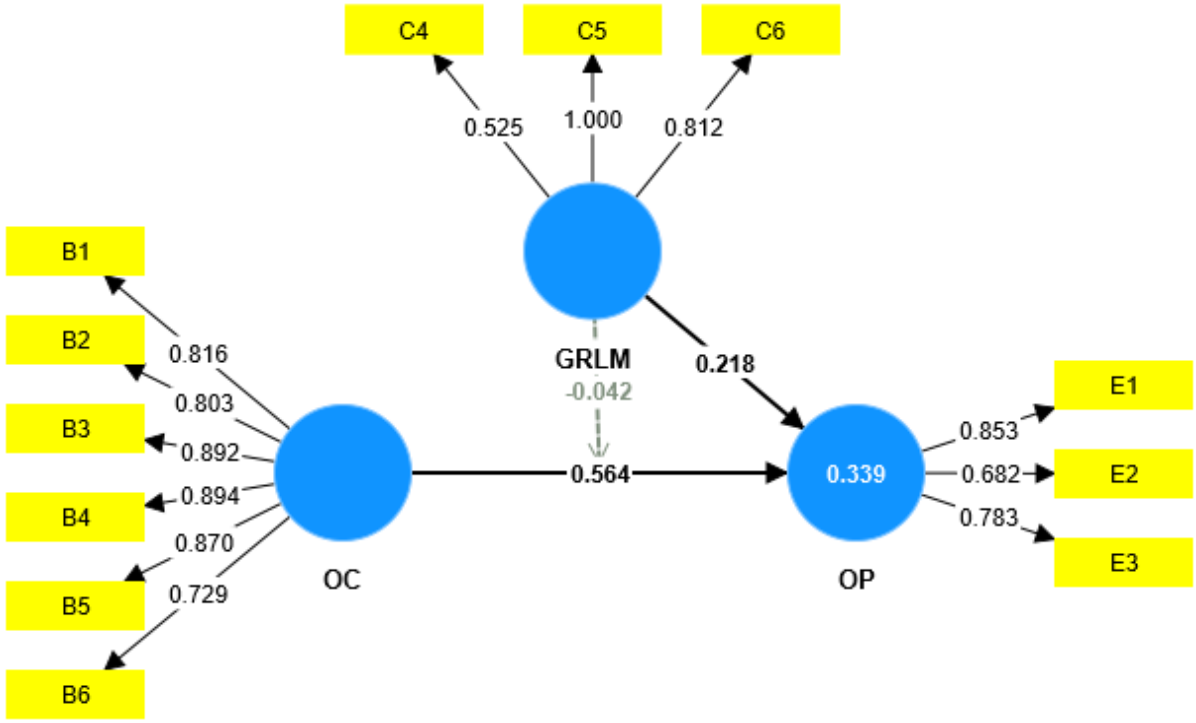

Figure 4: Structural equation modeling path diagram showing the moderating effect of governance reforms

4.7 The Significance of the Moderating Effect

Table 46 statistics show that the moderation impact is significant as the t value is 2.904. This score is higher than the threshold of 1.96, It is also observed that the p-value was 0.024 which is less than the maximum limit of 0.05 to confirm the statistical significance. The result implies that governance reforms had an indirect but significant moderating impact on the correlation between organizational characteristics and organizational performance. [89] stated that if all the path coefficients are significant when the moderating impact is also significant, it means that the direct impact of the independent variable on the endogenous is also significant.

Table 10: Results for moderating effect

	Path coefficient	T Statistics	P-Value	f^2
Moderating effect	-0.042	2.904	0.024	0.04

4.8 Total Effect Analysis

The results from the total effect analysis in Table 8 indicate that the postulated path relationships between organizational characteristics and organizational performance have significant total effects (β = 0.564, t = 5.527, p-value = 0.001), governance reforms influence on organizational performance follows (β = 0.218, t = 2.586, p-value = 0.016). The moderating effect of governance reforms on organizational performance had an indirect effect (β = -0.042, t = 1.981, p-value = 0.010).

Table 11: Total effect analysis

Hypothesized Path Relationship	Path Coefficient	T Statistics	P value
Moderating effect Governance reforms -> Operational performance	-.042	1.981	.010
Governance Reforms -> Organizational Performance	.222	2.586	.016
Organizational performance -> Organizational Characteristics	.564	5.527	.001

In this model, all the path relationships were statistically significant. PLS-SEM analysis outcomes affirmed that organizational characteristics explain 56.4% of the change in the performance of seaports in Africa. It also revealed a direct significant and positive correlation between organizational characteristics and the performance of seaports in Africa (β= 0.564, t =5.527, p = 0.001). Model estimation findings further confirmed a significant moderating impact of governance reforms on the performance of seaports in Africa (β= 0.222, t = 2.316, p-value = 0.016). The moderating effect of the hypothesized path relationship between governance reforms and performance was negative but significant statistically (β= -0.042, t = 0.198, p = 0.010). Therefore, the findings based on data collected from seaports in Anglophone Africa did not endorse the null hypothesis because the value of the p was smaller than 0.05. The conclusion therefore supported the idea that governance reforms exhibit a significant moderation influence on the correlation between organizational characteristics and performance of seaports in Anglophone Africa.

5. Discussion

The research determined that the landlord model of governance reforms had a significant impact on the performance of Anglophone African seaports and supported the idea from the questionnaire responses that the landlord model accounts for 78% of the ports surveyed. The study findings, therefore, agree with [90] who found that ports in Africa were gravitating toward the landlord reform model and that the most efficient and higher-quality ports in Africa had adopted the landlord model. The study outcomes also support the findings of [91] that the landlord model for port administration was so far the most popular worldwide accounting for over 80% of ports globally and therefore the most preferred by port governance reformists. The findings are also in congruence with the [92], which also found that in the early 21st century, the landlord reform model was the most popular and prevailing model of governance of seaports that surfaced. The findings were also in congruence with [93] who found that the most successful reform model preferred by port reformists in the world is the landlord model. The

model was also found to have gained popularity in the European Union where it is the preferred choice of seaport governance [94].

The findings also confirmed the application of the natural resource-based view theory (NRBV) as an anchor for this study. The NRBV proposes that sustained competitive advantage is attained once an organization's possessions which are rare, inimitable, valuable, and non-substitutable are linked with the natural environment to define strategic competencies [95]. The study confirmed these attributes to include infrastructure, ICT, strategic location, size, maritime studies, and hinterland connectivity. The study also confirmed that with the moderation of governance reforms which is anchored on the agency theory, these attributes lead to competitive advantage. In the port environment, competition is premised on tangible assets and intangible ones like the provision of services [96]. These come from the effects of external resources, like hinterland structure and accessibility, supply chain, and natural environment which are grounded on the DCT and NRBT [97].

The study findings confirmed that governance reforms of seaports in Anglophone Africa have been proven to lead to increased direct investment in port infrastructure which in turn led to improvement in the ports' operational, financial, and market share performance. A typical example is the Moroccan port of Tangier Med. A report by [98] titled "World Container Port Performance Index" ranks the Moroccan Port of Tangier Med container terminal as the fourth most efficient container handling port globally and is also the leading terminal in Africa based on vessel time in the port after adoption of the landlord model. This observation is supported by [99] who stated that port concession had an extremely positive and very significant impact on superstructure and ship turnaround time in Nigerian ports and [100] who found that Nigerian ports invested in improved infrastructure and equipment due to reforms and achieved an annual average efficiency of 67% in performance after reforms. Concerning public service ports, even though there is an apparent increase in investment in port infrastructure and container handling equipment in East and South African ports, their performances were found to be still below par compared to the successes in landlord ports [100]. It follows therefore that heavy investment in infrastructure and equipment in public service seaports does not inspire improved performance as long as the ports remain under public ownership and management. [101] recommend that further governance reforms were needed beyond landlord status for African ports especially the East African ports where regulatory reforms should be completed for reforms to have a meaningful impact. This study therefore recommends that the interests of all the African ports that are still under public ownership and management will be better served through a focus on governance reforms especially the landlord model and where necessary reforms be carried out on regulatory framework to inspire higher productivity and efficiency.

6. Conclusion

The main objective of the study sought to verify whether governance reforms had a significant moderating effect on the direct relationship between organizational characteristics and the performance of seaports in Anglophone Africa. To achieve this objective, a structural model and a hypothesis were first developed. The hypothesis predicted no significant moderating effect of governance reforms on the relationship between organizational characteristics and the performance of seaports in Anglophone Africa. PLS-SEM analysis using Smart PLS4.0 software was conducted to test the hypothesis. The findings showed that the path between organizational

characteristics and organizational performance was positive and significant. Likewise, the relationship between organizational characteristics and organizational performance with governance reforms acting as a moderating variable was also positive and significant. The verdict from empirical evidence was that governance reforms have a significant moderating effect on the link between organizational characteristics and the performance of seaports in Anglophone Africa. The conclusion is that governance reforms lead to enhanced performance that ultimately leads to sustained competitive advantage as championed by the dynamic capabilities theory.

7.Implications

This study found that governance reforms carried out on public service ports especially the landlord model positively and significantly moderated the relationship between organizational characteristics and the performance of seaports in Anglophone Africa. On contribution to practice and policy, the study will enable seaport managers, shareholders, government, and regulators to benefit from enhanced knowledge on the improvement of seaport performance by carrying out necessary reforms in governance. The implication of the study findings for all seaports in Africa that still operate as public service ports, they must carry out immediate reforms in their governance structures by adopting the landlord reform model which is the most popular worldwide. As established by this study, that is the only way that they can improve and enhance performance to gain a competitive advantage.

8.Limitations and Suggestions for Further Research

The questionnaire for this study was limited to senior executives of seaports. Future studies should consider interviewing seaport stakeholders like shareholders, shipping lines, clearing and forwarding agents, government agencies, regional governments, port regulators, suppliers, and employees instead of relying on port executives whose views may have appeared subjective again with a relatively small rate of response. This small response rate affected external realizable content validity and necessitated the use of the PLS-SEM analysis technique instead of the covariance-based SEM technique which is more robust. Studies should also consider the other regions where similar studies have not been undertaken and include across-culture indicator questions to unearth if cultural changes and practices have an impact on governance reforms and how they impact seaport performance. This study applied the Likert scale meaning that perceptual measures were used in producing data for all the variables. Perceptual measures are bound to vary over time and also among individuals. The hypothesized links among the research variables should be supported by more reliable and valid conclusions, which would only be expected from unprejudiced data. Future researchers should endeavor to use direct measures for the variables to enhance the validity of the results.

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