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Abstract

The 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 chief executive officers of seaport terminals in Anglophone Africa who are conversant with port operations and management. The targeted population of the study was 54 seaports in Anglophone Africa for which the questionnaires were administered through email. Sample questions were sent to at least one port in each of the three port regions in Anglophone Africa and the initial responses and comments made were used to refine the questionnaires before they were administered to all the 54 targeted seaports. Out of these, only 46 seaports responded, thus a response rate of 83.6%. The questionnaires conceptualized four governance reform models, private service, public service, corporatization, and landlord models to establish which ones were prevalent in Anglophone Africa. Out of the 46 respondents, 36 of them, or 78% were found to have adopted the landlord model, while 10 of them, or 22% had a public service model. There was no response on the private service model and corporatization model. Model fitness was confirmed by the use of Standardized Mean Root Square Residual (SRMR) and Normed Fit Index (NFI). Partial Least Squares Structural Equation Modelling (PLS-SEM) using Smart PLS 4.0 software was used for data analysis The findings established a positive and significant moderating effect of governance reforms on the relationship between organizational characteristics and organizational performance. The study concluded governance reforms have a positive and significant impact on the performance of seaports in Anglophone Africa. The study also finds that seaports in Anglophone Africa are increasingly identifying with the understanding of port governance reform models seen from both theoretical and empirical points of view. 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, landlord model.

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Introduction

Given the present competitive situation for organizations, managers must identify the characteristics that are critical for achieving acceptable levels of sustainable performance (Sunitiyoso et al., 2022; Felicio et al., 2015). From previous literature, there exists empirical evidence and academic explanations that support the positive and significant effect of organizational characteristics on organizational performance and hence appreciating them becomes necessary while considering the development of a new institution, expanding an existing one, improving its performance, market share, and growth (de Waal, 2007). The definition of organizational performance and its measurement continues to compound scholars due to its complexity. In this regard, the factors that contribute to the improvement of organizational performance need to be identified, understood, and exploited (Santos & Brito, 2012. Governance reforms like private service model, corporatization, landlord model, and public service model have been progressively adopted by strategic public institutions to enhance organizational performance albeit with no concurrence on the outcomes hence the need for further empirical 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, new management tools like governance reforms, and the integration of stakeholder demands which enable ecologically maintainable performance (Claver-Cortes & Moliner, 2007). DCT accounts for the sustenance of competitive advantage by building new resources and capabilities (Teece & Pisano, 1994). 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 (Schroeder, Greer & Gaul, 2011). Stakeholder theory states that while making decisions managers should consider the interests of key stakeholders to balance their interests (Ambler & Wilson, 2006). Stakeholders' management is critical in seaport development because of the many stakeholders varied interests (Acheampong, Aryee, Andersen, & Hansen, 2022; Debrie & Lavaud, 2013).

The motivation behind this study was the prevailing exhibition of poor performance by the majority of seaports in Africa in comparison to well-established seaports in the developed world and the desire to try to understand the challenges and causes of 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 aim is to achieve high productivity and sustained performance (Notteboom, Pallis & Rodrigue, 2022). The World Bank (2007) stipulates seaport performance measures such as cargo throughput, vessel turnaround time, truck turnaround time, crane moves per hour, and cargo dwell time. This study adopted all these measures and also included other measures such as truck turnaround time, and terminal

charges, which are crucial factors of performance for terminal operators.

Seaports act as interfaces between interlinking modes of transport including maritime, rail, road, and inland waterways. The context of this study was seaport terminals in Africa managed by English-speaking port terminal operators. This study sought to explain how organizational characteristics and governance reforms had influenced the performance of seaports in Anglophone Africa. In the port environment, competition is premised on tangible assets and intangible ones like the provision of services (Notteboom & Rodrigue, 2022; 2005). These come from the effects of external resources, like hinterland structure and accessibility, supply chain, and natural environment grounded on the NRBV (Bichou & Gray, 2014). Dressner, (2013) observes that a seaport may acquire a distinctive sustainable competitive advantage when it is located strategically but not on equipment and labor which are easily imitable.

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 (Handoyo, Erlane, Ghani & Soedarsono, 2023; McMahon, 2012). Performance appraisal is requisite for the growth of any economic activity and therefore performance should be measured through a yardstick since companies' performances have to be equated with each other (Combs, Crook, and Shook, 2005). Studies by Sunitiyoso, Nuraeni, Pambadi, and Tiara (2022); Felicio, Caldeirinha, and Coelho, (2015) and World Bank (2007) identified 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. This study however adopted strategic location, size, information communications technology, infrastructure, maritime services and hinterland connectivity as the most important characteristics for this study especially applicable to seaports in Anglophone Africa based on the poor seaport performance concerns raised at the African chief executive officers' (CEO's) forum (2021).

Strategic location refers to proximity to the main trade routes by sea, air, rail, and road with highly efficient infrastructure. Proximity of an organization to these resources is a catalyst for higher performance (Ju, Xie & Tang, 2023). The physical size of a firm could be used to determine its real size together with its total labor and production equipment. Studies have indicated that large-sized firms tend to give better performance than smaller ones (Handoyo et al., 2023). They add that the age of an organization and the many years of experience may result in a higher possibility of better industry performance. Birley and Westhead, (1990) state that a long period of existence enables the firm to generate assets and competencies which could result in better performance. Infrastructure refers to the size and quality of an organization's internal capability. Studies have identified infrastructure as a contributor to performance (Rodrigue, 2020). 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 (Notteboom & Rodrigue, 2022). Efficiency, which means speed and reliability of services is another important factor of performance. Organizations that do not have the advantage of strategic location can leverage on efficiency and technology to enhance performance (UNCTAD, 2014).

Governance Reforms

Governance is the structure of practices, guidelines, and procedures through which an organization is controlled and directed (Chen, Pateman & Sakalayen, 2017). Governance reforms refer to the adoption 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 (Brooks et al, 2010). 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 (Notteboom et al., 2022). 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 (Brooks et al, 2021; 2017).

Due to prevailing imperfect prototype governance reform models, the World Bank (2007) 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 companies and lastly the Private Service model where the organization is privatized and therefore owned and operated by private companies. The distinction and separation depend on who owns infrastructure, and who manages and provides services (Notteboom & Haralambides, 2020). 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 improve seaport performance (World Bank, 2017).

Organizational Performance

Organizational performance is about efficiencies and effectiveness in the use of the organization's possessions and the attainment of its targets (Cera & Kusaku, 2020; Santos & Britos, 2012). Good performance indicates institutional effectiveness and competence in utilizing its capital as a contributor to the economy of a nation (Contu, 2021). Understanding performance is important to any commercial enterprise, be it the evaluation of performance compared to set targets and aspirations or, in reaction to rivals. Organizational performance involves the real output or outcome of an organization when

compared against the anticipated outputs. (Santos and Britos 2012). The performance of organizations concerns various experts in the fields of strategic planning, finance, legal, operations, and corporate development (Perez et al., 2007). According to Richard et al. (2009), 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. Some of the most common tools for measuring performance include key performance indicators (KPIs) and metrics, performance appraisals, 360-degree feedback, and balanced scorecards. Performance measurement estimates the parameters under which programs, investments, and acquisitions achieve targets (Perez et al., 2007).

Sea Ports in Anglophone Africa

African seaports fall under the umbrella of the Pan-African Association for Port Co-operation (PAPC). It was founded in 1999 to enable the regional port management associations to exchange port operational and management experience at the continental level. The regional associations are the Port Management Association of Eastern and Southern Africa (PMAESA), the Port Management Association for West and Central Africa (PMAWCA), and the Union of Port Administration of North Africa (UAPNA). Ports from developing countries command 72 percent of world container trade out of which African share is only one percent (UNCTAD, 2018). The main challenges facing African ports are inefficient cargo operations, lengthy cargo clearing and dwell times, inadequate port and hinterland infrastructure; lengthy documentation processes, and low levels of automation. Ports that utilize technology to gain productivity have a 36 pc higher profit than their rivals. Asian ports are mostly computerized, the vessel turnaround period could be down to seven hours in comparison to the average of five days for African seaports (Port Strategy, 2021). The African Seaport Chief Executive Officers Forum (2021) recommended, improved public investment structure, eradication of operational inefficiencies, and ambitious governance reforms to mobilize and attract public-private partnerships for financing of seaports

Literature Review

Theoretical Foundations

The natural resource-based view (NRBV) theory anchored this study. It was supported by the dynamic capabilities theory, the agency theory, and the stakeholder theory. The NRBV theory's origin was Hart (1995) who stated that the competitive advantage of an organization largely hinges on its link with the natural environment. NRBV works based on the realization that the competitive advantage of an organization essentially depends upon its relationship with the environment. The NRBV proposes that sustained competitive advantage is attained once an organization's rare possessions, which cannot be imitated, treasured, and non-substitutable are linked with the natural environment to define strategic competencies, like pollution inhibition, product stewardship, and sustainable development (Hart, 1995). Because the NRBV is usually criticized for lacking adaptability, to continually grow resources to maintain relevance in unsteady and stormy markets, (Eisenhardt & Martin, 2000).

Teece, Pisano, and Shuen (1997) presented the dynamic capabilities theory (DCT) which

inspired the continuous advance of organizational capabilities. The DCT uses capabilities that are exclusive to organizations to attain competitive advantage and also helps identify characteristics that are likely to impact on organizational performance making it a suitable theory for sustained performance (Teece et al., 1997). Kothuis and Slinger (2018) and Tubielewicz (1995) observe that for seaports, it is vital to have them efficient and at the same time environmentally safe. They observe that all seaports are built on natural habitats around local communities where they own equipment and receive frequent ship calls. Port Authorities are increasingly adopting eco-friendly approaches in ports which include onshore power, eco-technologies in equipment to contain air, noise, and oil pollution, and effluent discharge management (Hughes et al., 2012) which are anchored on the NRBV.

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. It is this conflict between the parties which is referred to as the agency problem. Agency theory endeavors to explain the gap between shareholders and company directors where control and proprietorship have been separated. In agency theory, the role of shareholders is limited in the organization and their only interest in the organization is maximization of their returns. Governance reforms and stakeholders' management are targeted at mitigating some of these agency issues to enhance organizational performance (Emiroglu et al., 2016). He says that governments have delegated responsibility to manage seaports to Port Authorities who have carried out reforms on behalf of the governments to improve performance. This requires strategic leadership and is anchored on the agency theory (Pirez da Cruz et al., 2013).

Stakeholder theory's origin was attributed to Freeman, (1984). He posits that failure to please one stakeholder could cause a problem, lead to conflicts, and affect performance. The theory states that while making decisions managers should consider the interests of key stakeholders to balance their interests (Ambler & Wilson, 2006). In the seaport industry stakeholder theory is also vital to governance reforms due to varied individual stakeholders' interests (Anderson et al., 2023; Dooms et al., 2018). Stakeholders' management is therefore pertinent in the application of seaport development and management nowadays. Stakeholders' concerns are varied and include the natural environment championed by the NRBT, new infrastructure greenfield developments, corporate social responsibility, disclosures, and conflict resolution (Lawer, 2019; Debrie & Lavaud, 2013).

Organizational Characteristics and Performance

From previous literature, there exists empirical evidence and academic explanations that support a 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 an organization's characteristics can improve performance, and what tends to vary is the combination of the factors which tend not to be always similar (Felicio et al., 2017). For example, studies found positive relationships between organizational size and age as great factors for financial performance (Ali et al., 2020), while other scholars found infrastructure and information communications as catalyzers for

enhanced performance (Sunitiyoso et al., 2022). Other scholars found strategic location and size as the reasons for high performance (Caldeirinha et al., 2017; 2011: Felicio et al., 2013, & Lui 2005). Other studies showed that the size of an organization increased productivity due to the economics of scale (Liu 1995; Wingmans 2003; Caldeirinha et al., 2015other studies found a learning effect in large-sized organizations which has improved performance (Estache et al., 2005; Turner, Windle & Dressner, 2004; Trujillo 2007).

Other studies by (Tongzon & Heng 2005; Pirez da Cruz et al., 2013) contradicted these findings indicating that smaller-sized organizations were more competitive with higher performance than the larger ones due to improved efficiency. Studies also identified infrastructure as another factor of performance (Felicio et al., 2015; Caldeirinha et al., 2011; Liu 1995) but other scholars contradicted these findings (Rorigues 2017; Alonso-Garcia and Bofarull, 2007 who found that equal levels of investment in infrastructure did not always yield same levels of improvement in performance. Studies by Parola et al. (2017) and Wang et al. (2014) identified costs as another factor of organizational performance. However, Yeo, Ng, Lee, and Yang (2014) and Liu (2005) found that port customers readily paid higher charges if there was a higher level of efficiency. Notteboom and Wang (2015) and Murphy (1991) stated that performance improvement was due to efficiency from increased use of ICT in operations and supply chain networks. The role of organizational characteristics on performance continues to raise a debate that requires further research, especially in the context of seaports in Anglophone Africa.

Organizational Characteristics, Governance Reforms and Performance

Empirical evidence exists to confirm that organizational characteristics influence organizational performance (Felicio et al., 2015; Caldeirinha et al., 20112). 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. There is evidence that stakeholder theory has in the recent past been utilized in studies involving the governance of ports (Dooms, 2018; Kothuis & Slinger, 2018). 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 (Anderson et al., 2023; Lawer, 2019; Dooms, 2018). Whereas Felicio et al. (2015) and Estache et al. (2005) argued that it was specific characteristics that led to improved performance in each context of the study, Trujillo (2007) and Wingmans (2003) disagreed and argued that it was the type of governance reforms model that improves performance. This view was given credence by studies from (Villa 2017; Chen et al., 2017; Parola et al., 2017; Notteboom & Yang 2017) 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 Monios (2017) who found that reforms could be undermined by inefficient governance structures and conflicting decision-making processes.

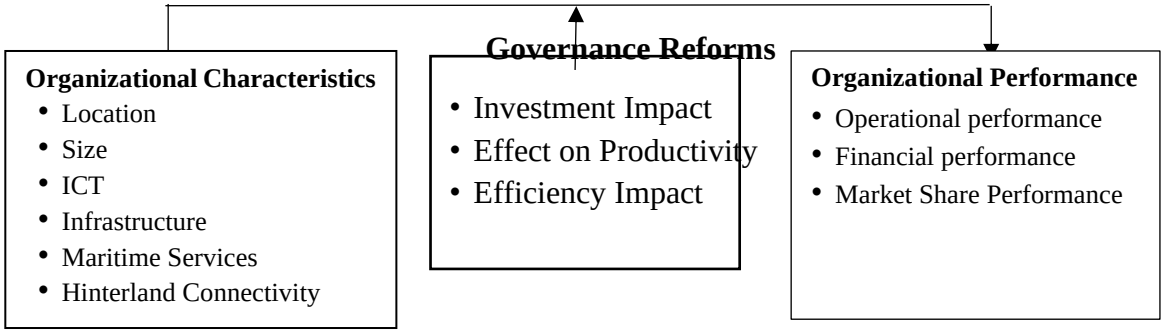
Another contrasting view came from Bergvist and Cullinane, (2017) who found that governance reforms led to industrial disputes, price increases, and poor performance.

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 (Tseng & Pilcher, 2017). However, UNCTAD's (2018) annual report 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 Anderson et al. (2023) and Brooks et al. (2017), 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. Tongzon and Heng (2005) 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 Saundry and Turnbull (1997) that fully privatized ports in the United Kingdom ports did not meet the expected improved efficiency compared to publicly owned and managed seaports. In contrast, Chen et al. (2017) recognized that the full privatization of ports in Australia had positive and general productivity and financial performance enhancements. On the other hand, De Langen and Van de Lugt, (2017) 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 performance of seaports in Anglophone Africa.

Conceptual Framework

This study built on this literature review from the previous studies to conceptualize the moderating impact of governance reforms on the correlation between organizational characteristics and the performance of seaports in Anglophone Africa. In the conceptual framework, organizational characteristics had location, size, information communications technology, infrastructure, maritime services, and hinterland connectivity. The indicators of governance reforms were; Investment impact, effect on productivity, and efficiency impact. The indicators for organizational performance were operational performance, financial performance, and market share performance. The conceptual framework is shown in Figure 1.

Figure 1. Conceptual Framework



The hypothesis for the study stated as follows:

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

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 (Saunders, Lewis &Thornhill, 2007). Previous studies have successfully adopted this research design using PLS-SEM for analysis (Chirchir, 2022; Odock; 2016). Data collection was done at the same point in time using structured questionnaires which were administered to the 54 seaports by email to the chief executive officers of seaports. Of these 54 only 46 of them (83.6%) responded to the questionnaires. This research applied partial least squares structural equation modeling (PLS-SEM) in analyzing the data. Wong (2013) explains that it is a soft modeling technique that does not make assumptions about the distribution of the data and is the best alternative to covariance-based structural equation modeling (CB-SEM when dealing with small samples below 100.

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, Shapiro-Wilk test showed a range between 0.931 ($p = 0.091$) for governance reforms to 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 (Tabachnick & Fidell, 2001). Tests for multicollinearity was carried out using variance inflation factor (VIF) for checking the correlation and correlation weight between exogenous variables in a model of regression. The VIF values for the models varied between 1.001 and 1.343 as proof that there was no correlation between the exogenous variables in the model (Razani & Wah, 2011). The tolerance values ranged from 0.745 to 0.999 which implied that there was no threat of multicollinearity. Feherty (2007), advocate for a value of tolerance above 0.2 to indicate a lack of multi-collinearity.

The Durbin-Watson test was engaged 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 (Jose, 2013). 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.

Kaiser-Meyer-Olkin (KMO) and Bartlett's analysis were done to examine the ability to carry out an exploratory factor analysis 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 (Kaiser, 1974). Bartlett's Test findings showed that chi-square values for all the latent constructs were significant as the value of p was 0.001 (Barlett, 1954). The findings of the examinations implied that it was appropriate to render all the items signifying the latent variables for exploratory factor analysis. This information is presented in Table 1.

Table 1: KMO and Bartlett Test Results

Objectives variables	KMO-Bartlett value	Chi-square	Df	P-value
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

Results

The objective of the study was to determine the effect of governance reforms on the relationship between organizational characteristics and performance of seaports in Anglophone Africa. Organizational characteristics were operationalized using six (6) sub-constructs each with three items per indicator. These are strategic location, size, information communications technology, infrastructure, maritime services, and hinterland connectivity. Governance reforms comprised of three constructs, investment impact, productivity impact, and efficiency impact. The dependent variable organizational performance had three sub-constructs operational performance, which had three indicators, financial performance which had six indicators, and market share performance which had three indicators. A 5-point Likert scale was used to convert qualitative information into quantitative data. The indicators of each sub-construct were rated on a five-point Likert scale ranging from one (1) denoting "not at all" to five (5) representing "very large extent".

Out of the 54 seaports for which questionnaires were administered only 46 responded, thus a response rate of 83.6%. Out of the 46 respondents, 36 of them (78%) were found to have been reformed and adopted the landlord status, while 10 responses (22%) were still public service ports. Only the 36 landlord seaports were evaluated since the 10 public service ports had a sample of less than 20 thus not valid for PLS-SEM analysis (Hair et al., 2010). PLS-SEM data analysis using Smart PLS 4.0 software was used to assess the relationship between the latent variables in order to determine the predictive potential of the conceptual model for the seaports in Anglophone Africa because it was the most suited for research where the sample sizes below 100 (Hair et al., 2014). 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 (Bryne 2010). All the correlations between the observed variables and their respective factors 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 (Hair et al., 2014; Wong, 2013). Table 2 provides results for the reliability of the reflective outer model.

Table 2: 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

Table 2 statistics show the three latent constructs' indicators for the hypothesized model had specific reliability scores higher than 0.5 (Hair et al., 2014). The outcomes showed the indicator reliability for the three variables organizational characteristics, governance reforms, and organizational performance were between 0.686 and 0.955 which are greater than the minimum of 0.4 specified by Hair et al. (2010) and a good number were above the maximum level of 0.7 preferred by Vinzi et al., (2010). The p values and all outer model loadings are significant and this permitted further analysis (Wong, 2019). Bootstrapping procedure outcomes with 500 resamples confirm the model's statistical significance since all p-values were below 0.05.

Composite reliability values were used to assess internal reliability consistency. Information from Table 3 shows that scores for composite reliability for the latent variables range between 0.733 and 0.997 and these are greater than 0.6 (Bagozzi & Yi, 1988). Furthermore, the outcomes reveal that the scores of Cronbach Alpha were between 0.701 to 0.983 and therefore met the threshold of 0.7 limit suggested by Hair et al. (2010) thereby confirming model reliability. The bootstrap procedure with 500 resamples confirmed the model's statistical significance since p-scores

were less than 0.05. Therefore there was a high level of internal consistency reliability for the constructs (Hair et al., 2010).

Table 3: 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 the three latent constructs obtained from the PLS-SEM analysis in Table 3. 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 (Hair et al., 2010). In addition, from the confirmatory factor analysis output obtained from PLS-SEM appearing in Table 4, all the indicators of the latent constructs loaded more heavily onto the corresponding latent variables as a further confirmation of convergent validity.

Table 4: 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 5.

Table 5: Pearson's Correlation Matrix

Variables	OC	GR	OP
Organizational Characteristics (OC)	1		
Governance reforms (GR)	.653	1	
Operational 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 (0.699) for organizational characteristics was 0.836. This figure was greater than the score of correlation for 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 Fornell and Larcker (1981).

Table 6: Fornell-Larcker Criterion Analysis

Latent Variable	Organizational Characteristics	Governance Reforms	Organizational Performance
Organizational characteristics	**.836**		
Governance Reforms	.653	**.803**	
Organiz6tional performance	.460	.509	**.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 (Teo et al., 2008) to confirm discriminant validity as shown in Table 7.

Table 7: Heterotrait-Monotrait Ratios

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

Governance reforms were hypothesized to moderate the linkage between organizational characteristics and organizational performance as shown in Figure 1. Organizational characteristics are 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). From the path diagram, 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. The model path diagram generated from PLS-SEM is shown in Figure 2.

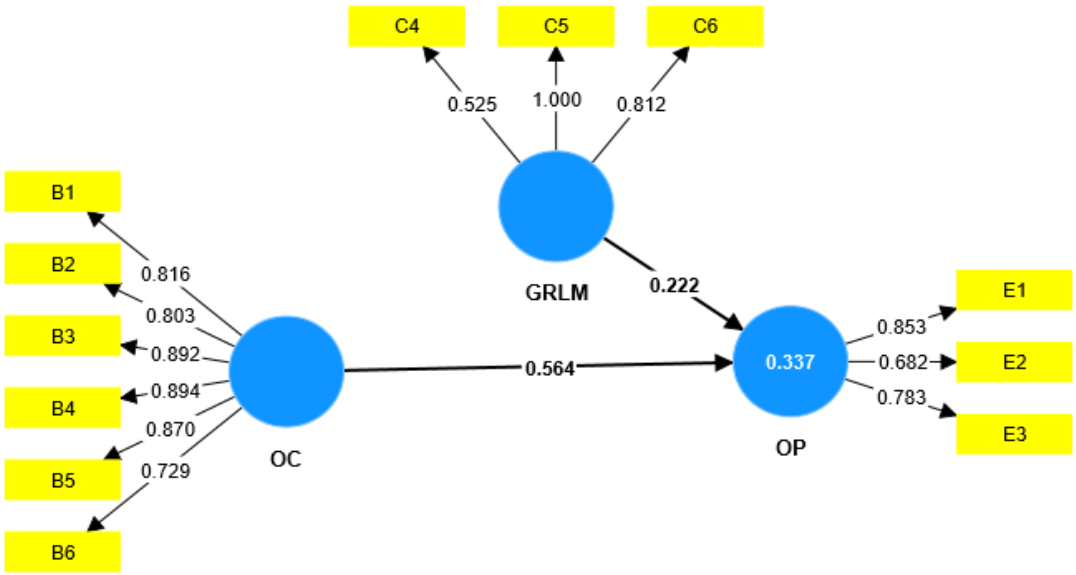


Figure 2: Path diagram showing the linkage between organizational characteristics, governance reforms, and organizational performance.

The effect sizes f^2 shown in Figure 3, were also obtained from PLS SEM output for organizational characteristics was 0.473, while that of governance reforms was 0.073. Hair et al., (2021) 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 (Hair et al., 2021).

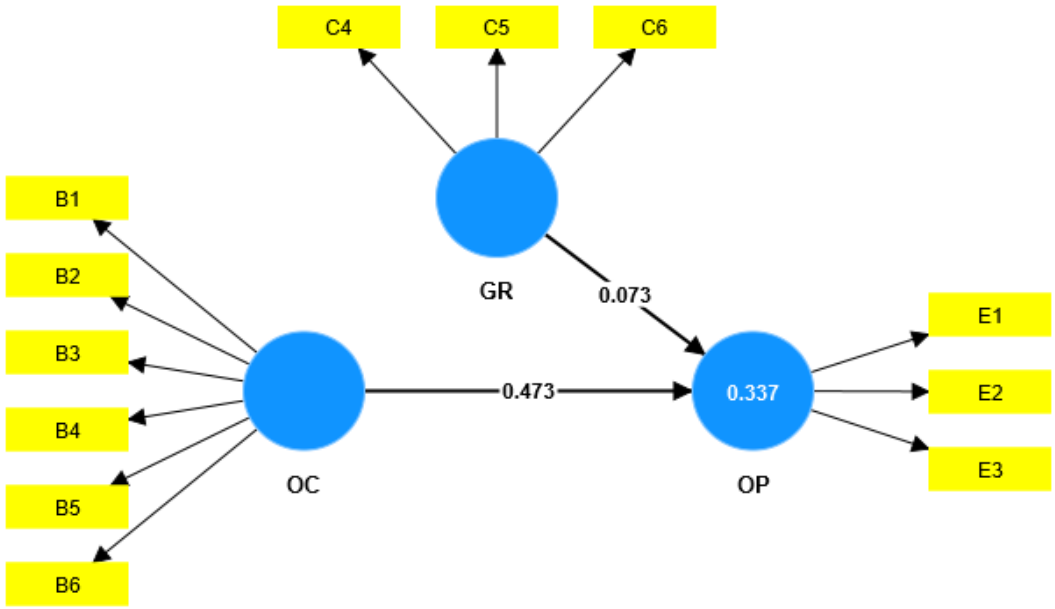


Figure 3: Path diagram showing the effect sizes on the linkage between organization characteristics, governance reforms and organizational performance.

The moderation analysis displayed in Figure 4 shows 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. Henseler and Chin (2010) advocate for a two-stage method if the main intention is to measure the effect of moderation's significance. The moderation effect results imply that governance reforms had an indirect but significant moderating impact on the correlation between organizational characteristics and organizational performance. If all the path coefficients are significant and the moderating impact is also significant, it means that the direct impact of the independent variable on the endogenous is also significant (Hair et al., (2013).

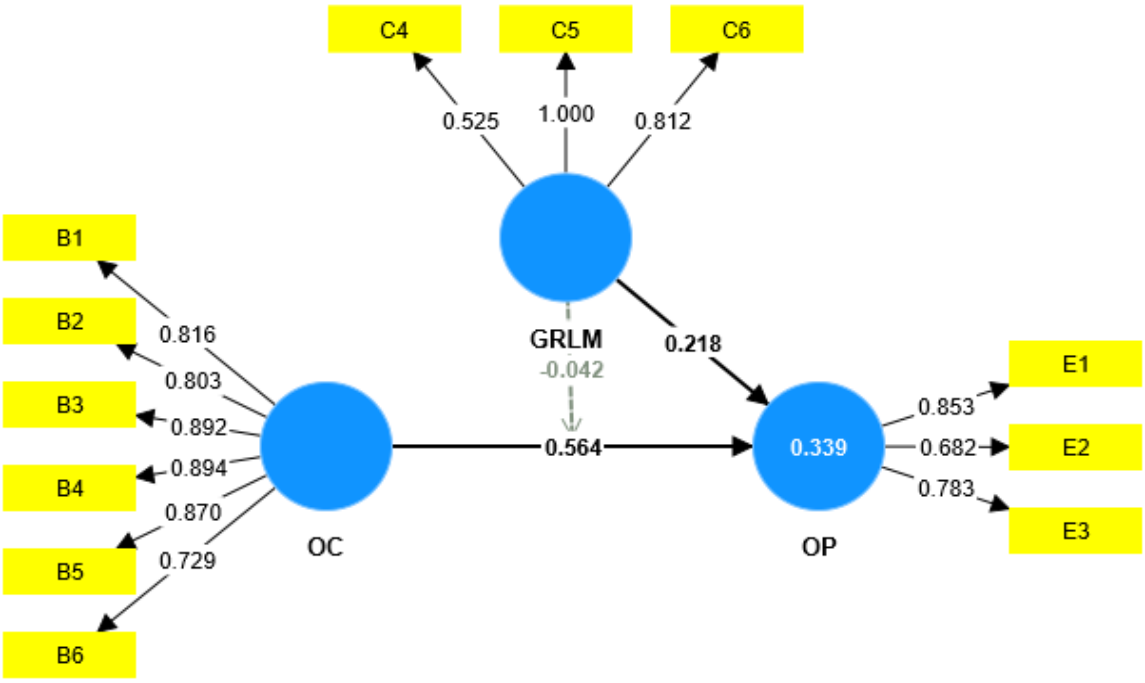


Figure 3: Path diagram showing the moderation effect of governance reforms on the linkage between organizational characteristics and organizational performance.

Collinearity was assessed for the inner and outer models. In both cases, the findings showed that the scores for Variance Inflation Factor (VIF) for governance reforms and organizational characteristics and also for the indicators of the two outer model latent constructs had scores of VIF which were smaller than 5 and the tolerances were higher than 0.2 which affirms outer model's lack of multicollinearity (Hair et al., 2011). The predictive relevance measure, Q^2 (Stone, 1974; Geisser, 1974) which was obtained from PLS-SEM output was 0.220. Hair et al., (2014) suggested a Q^2 score of 0.02 displayed a small relevance, 0.15 medium relevance, while 0.35 demonstrates a large predictive relevance of an exogenous construct. Therefore, the predictive relevance of this model falls midway between medium and large predictive relevance.

The standardized root mean square residual (SRMR) for the model fit, which was obtained

from PLS-SEM analysis was 0.104. This was marginally higher than the recommended value of 0.1, while the Normed Fit Index (NFI) value was 0.767 compared to maximum threshold of 0.9 for the best fit ((Ringle et al., 2022). These small variations were due to small sample size analysis.

(Hooper, Coughlan, Mullen, & Michael (2008). The combined SRMR and NFI results indicated that the model was well constructed (Ringle. 2016, Kline 2015). The PLS-SEM output in Table 8 shows the total effect of the moderation

Table 8: Total Effect Analysis

Hypothesized Path Relationship	Path Coefficient	T Statistics	P values
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

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). In this model, all the path relationships were statistically significant. PLS-SEM analysis outcomes affirmed that organizational characteristics explains 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 that 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 and positive moderation influence on the correlation between organizational characteristics and performance of seaports in Anglophone Africa.

Discussion

The research determined that the landlord model of governance reforms had a significant impact on the performance of seaports in

Anglophone Africa and the supported the idea from the questionnaire responses that the landlord model accounts for 78% of the seaports surveyed. The study outcomes therefore support the findings of Notteboom and Haralambides (2020) 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 seaport governance reformists. The findings are also in congruence with the World Bank (2017), which also found that in the early 21st century, landlord reform model was the most popular and prevailing model of governance of seaports that surfaced. It was also found to have gained popularity in the European Union where it is the recommended choice of seaport governance (Carvalho & Marques, 2017). The study findings also agree with Trujillo, Gonzalez, and Jemenez (2015) who found that ports in Africa were gravitating towards the landlord reform model and that the most efficient and higher-quality ports in Africa had adopted the landlord model.

This study found that governance reforms of seaports in Anglophone Africa led 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. According to World Bank (2023) report "World Container Port Performance Index" ranks the Port of Tangier Med container terminal as number four of the most efficient container ports globally and also the leading terminal in Africa based on vessel time in the port after adoption of the landlord model. This observation is supported by Okeke (2022) who stated that port concession had an extremely positive and very significant impact on superstructure and ship turnaround time in Nigerian ports and Akenyemi (2015) who found that Nigerian ports invested in improved infrastructure and equipment due to reforms and achieved 59 to 75% average annual efficiency in performance after reforms.

Dooms and Farrell (2017) recommend that further governance reforms were needed beyond landlord status for the East African ports, especially in Kenya where regulatory reforms should be completed. Even though there is increasing investment in infrastructure and container handling equipment in East and South African ports, their performances were found to be still below par compared to the successes noticed in landlord ports (Dooms and Farell, 2017). 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. This study, therefore, recommends that the interests of all the African ports that are still under public ownership and management be better served through a focus on governance reforms, and more specifically the landlord model for the seaports in Anglophone Africa.

Conclusion

The main objective of the study sought to verify whether governance reforms had 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 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.

This study concludes that governance reforms especially the landlord model positively and significantly improved the performance of what were previously public service ports post reforms. This study therefore recommends that those seaports in Africa that have not undertaken reforms should do so immediately for them to remain competitive and relevant. In doing so they should consider the landlord model which is the most popular globally. In contribution to practice and policy, the study will enable seaport managers, shareholders, government, and regulators to benefit from enhanced new knowledge which is necessary for the improvement of port performance with a view to gaining a competitive advantage.

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 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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