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CONCESSION AND BLUE ECONOMY PERFORMANCE

By

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ABSTRACT

The substantial coastline along the Atlantic Ocean and a rich abundance of marine resources has positioned Nigeria for a crucial role in the global blue economy. Despite significant concession efforts to drive social benefits, literature inadequately addresses strategic practices using concession to deliver blue economy performance in developing nations. This study, underpinned by institutional theory, assessed the influence of concession as a strategic tool to enhance blue economy performance of Nigerian ports. Using a survey method with 225 valid responses from maritime operators at Lagos Port Complex and Tin Can Island Port Terminals, data were analyzed using regression analysis. Findings revealed positive and significant influence of concession on blue economy performance, with concession risk allocation ($\beta=0.578$, $p<0.05$) making the highest contribution, followed by concession project evaluation ($\beta=0.654$, $p<0.05$) and concession risk assessment ($\beta=0.454$, $p<0.05$), while concession policy ($\beta=0.394$, $p<0.05$) had the lowest contribution. The study concludes that government agencies like Nigerian Ports Authority should strategically employ concession components to enhance blue economy performance. Policy recommendations include developing comprehensive risk allocation frameworks and strengthening project evaluation mechanisms for sustainable maritime development.

Keywords: Blue economy performance; concession policy; concession project evaluation; concession risk allocation; concession risk assessment.

1.0 Introduction

Ports play critical role in the global economy as essential entry points connecting transportation corridors to the rest of the globe. They are equally crucial in connecting island and peripheral regions with the international market (European Commission, 2025). In addition to marine businesses like fisheries, defense, tourism, and natural resource management, ports are essential

hubs for conventional maritime sectors like cargo and shipbuilding. These sectors comprise the traditional blue economy, which is expected to increase in size to $3 trillion by 2030, according to the Organization for Economic Cooperation and Development (World Economic Forum, 2024).

The blue economy incorporates any economic activity centered around or associated with the coasts, seas and oceans. This covers a broad range of economic sectors including ports, shipping, aquaculture and fisheries, coastal tourism and marine renewable energy. As nations and industries increasingly acknowledge the significance of the blue economy, there is a growing emphasis on fostering international collaboration, conducting research and promoting innovation to tackle shared challenges and optimize the advantages derived from marine resources (Notteboom, Pallis & Rodrigue, 2022; Nwosu, Adebisi & Olayemi, 2025; UNCTAD, 2025).

With a vast coastline along the Atlantic Ocean and a rich array of marine resources, Nigeria is positioned to play a crucial role in the global blue economy to propel economic growth, alleviate poverty, and fortify food security (World Bank Group, 2023).

1.2 Statement of the Problem

Numerous ports in Nigeria are contending with massive infrastructure deficits and operational efficiency issues requiring injection of capital investment. This is owing to outdated technology and insufficient capacity to manage the growing volume of maritime activities to facilitate blue economy. This creates a need for going into public-private partnership with a view to upgrading aging infrastructure, deploy modern technology, manage terminals, and reducing reliance on limited public funds. The utilization of concession as Nigeria's effort to diminish the deficit in its public infrastructure portfolio has not achieved complete success (Sani, 2022). Despite the contributions of literature on concession model and Nigerian public establishments, it is evident that they are more on legal frameworks than strategic frameworks to deliver effective performance of Nigerian ports from the perspective of blue economy. This study, therefore, examines concession as a strategic option to enhancing blue economy performance of Nigerian ports.

1. 3 Objectives of the Study

The main objective of this study is to empirically examine the influence of concession and blue economy performance of the Nigerian ports, while the specific objectives are to:

i examine the effect of concession policy on blue performance of NPA

ii ascertain the effect of concession risk assessment on blue performance of NPA

iii. understand the effect of concession risk allocation on blue performance of NPA

iv. find out the effect of concession project evaluation on blue performance of NPA

2.0 Literature Review

2.1 Theoretical Review

This work is underpinned by Institutional Theory, which was introduced in the late 1970s by John Meyer and Brian Rowan as a tool for delving deeper into the ways organizations align with the society (Jepperson & Meyer, 2021). Institutional theory underscores the significance of isomorphism, which refers to the inclination of organizations to emulate established practices (Amoako, Adam, Arthur, & Tackie, 2021). The success of concession hinges on the careful alignment of collaborations with existing institutional structures, ensuring adherence to established norms while contributing to overarching objectives of economic development and efficient service delivery (Kwofie, Ellis & Opoku, 2021).

Within the domain of public-private partnership, institutional theory offers valuable insights into the intricacies of collaboration between public and private entities (Klijn, 2022; Marschlich & Ingenhoff, 2022). In the context of concession, institutional theory emphasizes the significance of established regulatory frameworks, legal structures, strategic and cultural practices that influence the decision-making processes of public institutions involved in such partnerships (Devkar, Palliyaguru & Oyegoke, 2020; Kwofie et al., 2021).

2.2 Conceptual Review

2.2.1 Concession

A concession as part of public-private partnership (PPP) entails an agreement between a public sector authority and a private company in which the private firm is responsible for delivering a public service or project and takes on significant financial, technical, and operational risks associated with the undertaking (ICRC, 2025). Concession is known for providing high-quality infrastructure, more affordable services, enhanced operational efficiencies and most importantly, achieving optimal value for money (Notteboom, Pallis & Rodrigue, 2026).

Countries have been devising diverse management and financing mechanisms to develop their port infrastructure, aiming to optimize operational efficiency and effectiveness over the years

(Notteboom et al., 2026). The reform model adopted by the Nigerian government is the landlord port system popularly known as concession (Nigerian Ports Authority, NPA, 2026; Bureau of Public Enterprise, BPE, 2025)**.** In a general sense, concessions are considered as a subset of public-private partnerships and have emerged as a crucial tool for implementing structural reforms in numerous developing economies (Engel, Fischer, & Galetovic, 2020; Monehin, Ogbodo-Nathaniel & Afuye, 2026).

The concession of the ports involved transferring operational rights to the private sector, while the government agency retained ownership of port land and continued to provide pilotage and towage services (Mthembu & Chasomeris, 2023). Under this approach, the government, through its agency, the Nigeria Port Authority (NPA), retains ownership of the infrastructure (NPA Handbook, 2024). The management and operations of the facilities are then contracted out to the private sector through a competitive process, with investment obligations spanning from 10 to 25 years (Celik & Umar, 2020). The duration of the arrangement correlates with the level of investment obligations imposed on the private terminal operator, with longer tenors requiring higher investments (Celik & Umar, 2020).

2.2.2 Blue Economy

The concept of blue economy emanates from the green economy, which, in turn, is derived from the larger sustainability concept of the 1972 Stockholm World Conference on Environment and Development (Karani, Failler, Gilau, Ndende, & Diop, 2022; Nwosu et al., 2025). The blue economy functions as the basis for economic development and growth, delivering potential and opportunities to actualize sustainable development in conjunction with the AU Agenda 2063 for inclusive sustainable development (Ayilu, Fabinyi, Barclay, & Bawa, 2023; Karani et al., 2022). It acknowledges that the productivity of ocean ecosystems provides a route for the development of aquatic and maritime-based economies (Ayilu et al., 2023; Guerreiro, 2022).

The blue economy paradigm calls for an integrated, holistic, and participatory strategy that encompasses the sustainable utilization and management of deepwater resources, by creating life below water (Karani et al., 2022; Okafor-Yarwood, Kadagi, Miranda, Uku, Elegbede, & Adewumi, 2020). The blue economy advocates for the preservation of aquatic and marine ecosystems, emphasizing the sustainable utilization and management of associated resources. It is grounded in principles of equity, low carbon development, resource efficiency, and social inclusion (Ayilu et al., 2023; Okafor-Yarwood et al., 2020). This concept unifies the sectors of the

blue economy through a socially inclusive process, with the objective of catalyzing structural transformation, fostering integrated development, and enhancing regional cooperation and coordination. Hence the coastal resources can be reaped in a manner that is both environmentally and socially supportable as well as economically creative (Guerreiro, 2022; St. Pier, Ahmadov, & Guliyev, 2025).

2.2.3 Concession Policy

Through collaborative concession agreements with private sector entities, ports can harness external expertise, technology, and capital to improve port infrastructure, optimize operational processes, and expedite the seamless transportation of goods within the maritime sector (NPA, 2022; Song, Chhetri, Ye, & Lee, 2023). This approach positions ports to capitalize on the economic potential inherent in the blue economy while fostering sustainable development practices (Qayyum & Rehman, 2022). Introducing concession policy within the Nigerian Ports Authority could as well be a strategic initiative to accelerate the growth of the blue economy in the nation. Given Nigeria's expansive coastline along the Atlantic Ocean, the blue economy, centered on the sustainable utilization of ocean resources for economic advancement, holds considerable promise.

Within the concession framework, the NPA could have the capacity to draw private investment for the advancement of contemporary port facilities, encompassing deep-sea ports, shipyards, and logistics hubs. Private partners possess the capability to introduce cutting-edge technologies for the management of ports, handling of containers, and implementation of security systems, thereby enhancing operational efficiency and reducing turnaround times of vessels (Breskin & Pandey, 2021).

2.2.4 Concession Risk Assessment

To bolster the blue performance of ports through the implementation of a concession strategy, a comprehensive risk assessment is imperative to pinpoint and address potential challenges (Lima, Brochado & Marques, 2021). An integral risk to consider is the uncertainty in regulations, where alterations in government policies or legal frameworks can potentially disrupt the stability of the partnership. Consequently, conducting a meticulous examination of prevailing regulations and engaging proactively with relevant stakeholders becomes essential to establish a resilient and supportive environment for the successful execution of the concession initiative (Prebanić & Vukomanović, 2023).

In addition, economic risks, encompassing fluctuations in global trade, currency exchange rates, and commodity prices, necessitate careful evaluation to formulate effective risk mitigation strategies, ensuring the enduring financial sustainability of the partnership (Lima et al., 2021). Therefore, through a systematic concession risk assessment, the Nigerian Ports Authority could proactively navigate uncertainties and fortify the resilience of its initiatives in the blue economy.

2.2.5 Concession Risk Allocation

Incorporating performance-based payment structures, wherein the private partner receives revenue incentives for meeting or surpassing specific performance metrics, can align the interests of both parties and mitigate the risk associated with revenue shortfalls (OECD, 2025). Effectively managing risk allocation is a crucial element in propelling the blue performance of ports through public-private partnerships (Rasheed, Shahzad, Khalfan & Rotimi, 2022).

A notable risk in collaborations involves uncertainties tied to demand and revenue projections. To address this challenge, a well-organized concession agreement is expected to delineate mechanisms for sharing demand risks between the public and private sectors (ICRC, 2024). The agreement has to unambiguously define responsibilities and liabilities in the event of fluctuations in shipping volumes or unforeseen economic downturns, ensuring an impartial and fair distribution of risks (World Bank Group, 2026).

By judiciously assigning risks within the public-private partnership arrangement, the ports ensure that private partners harbor vested interest in the enduring sustainability of marine infrastructure (Platias, Chlomoudis, Pallis, Tozidis & Zarakeli, 2025). The agreement has to precisely outline maintenance standards, lifecycle costs, and the distribution of responsibilities for repairs and upgrades (Platias et al., 2025). Through these measures, the NPA could motivate private partners to invest in state-of-the-art technologies and environmentally sustainable practices, bolstering the resilience and longevity of port facilities in alignment with the objectives of a thriving blue economy.

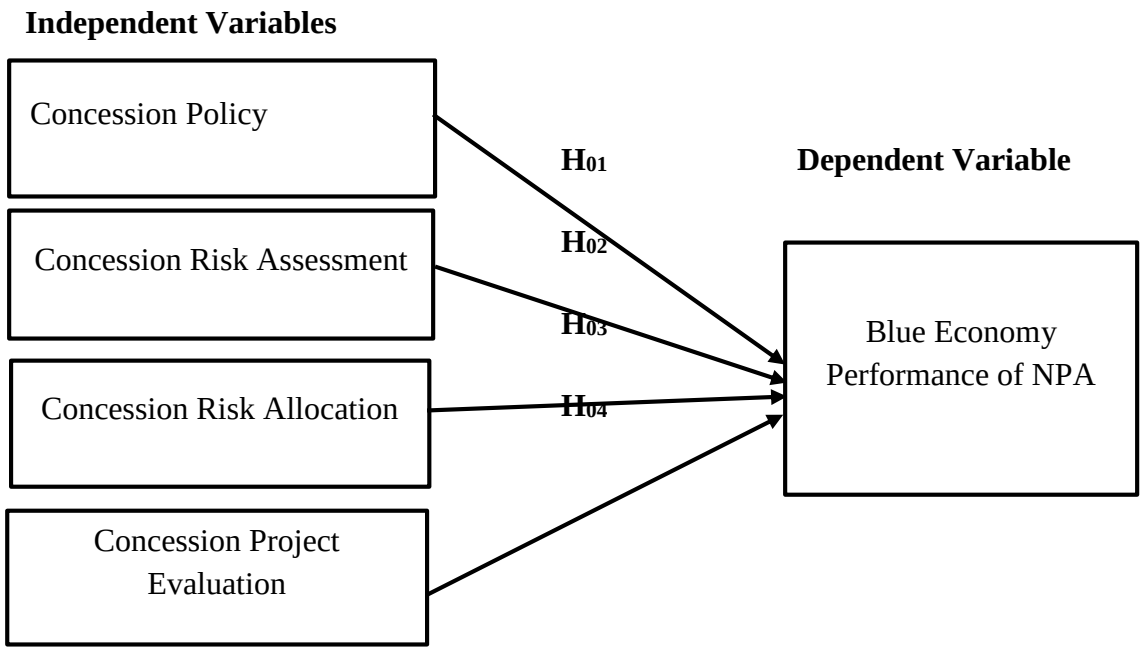
2.2.6 Concession Project Evaluation

It is crucial to assess the technical expertise, financial capabilities, and track record of prospective and potential partners in managing intricate maritime projects (Akomea-Frimpong, Xiaohua, & Robert, 2021; Lopes, Nabais, Pinto, & Caldeirinha, 2025). In order to advance the blue performance of ports through concession, a meticulous project evaluation process is imperative

(Platias et al., 2025). The assessment commences with a detailed scrutiny of the alignment between the objectives of the blue economy initiatives and the objectives of potential private partners (Satizábal, Dressler, Fabinyi, & Pido, 2020).

A comprehensive economic feasibility study has to be undertaken considering factors such as market demand, potential revenue streams, and the economic impact of the concession on the local and national economy (Shim & Kim, 2022). Through a thorough project evaluation, ports can identify private partners who not only bring financial robustness to the collaboration but also possess the requisite expertise and dedication to contribute significantly to the sustainable development of the blue economy (Satizábal et al., 2020). By integrating project evaluation process, the NPA could cultivate a comprehensive approach to blue economy development, striking a balance between economic growth, environmental sustainability, and social responsibility.

Fig. 1: The Study Conceptual Model



Source: *Researchers (2026)*

Figure 1 demonstrates the interaction between independent variables (concession policy, concession risk assessment, concession risk allocation, and concession project evaluation) on the blue economy performance of the Nigerian Ports Authority as dependent variable.

3.0 Methods

This study applied a survey method whereby the data were gotten via primary source. The primary data involved using questionnaire to extract information from maritime operators at Lagos Port Complex and Tin Can Island Port Terminals because of their knowledge and experience in the maritime concessions. Lagos State is considered in this study because port concession is prominent in Lagos ports, and they are the major seaports in Nigeria based on the volume of marine activities and revenue they generate compared to other ports in the country.

The ports in Lagos, namely Lagos and Tin Can Island, were categorized based on their distinct locations. To address this, the researcher engaged with the respective chapters of the groups associated with these ports. This proactive approach aimed to prevent the administration of questionnaires to inappropriate respondents who might not provide relevant information. The study further distributed 150 copies of questionnaire to each stratum for adequate representation, making a total of 300 copies of questionnaire. This is necessary to ensure valid and generalized results (Hair, Black, Babin & Anderson, 2018). The team of experts provided face and content validity of the instrument while construct validity showed composite reliability (CR) value of 0.7 and above. Also, the reliability test carried out during the pilot study indicated that the variables met the required Cronbach's alpha value of 0.7 and above (Field, 2018). However, out of the 300 copies of questionnaire administered, 225 copies were filled and returned representing 75% response rate. To test the four hypotheses of this study, inferential statistics with the aid of regression was employed and it was statistically significant at $p<0.05$.

4.0 Analysis

4.1 Analysis of Correlation among the Study Variables

Table 1: Correlation matrix among the study variables

	Variables	Mean	S.D.	N	1	2	3	4	5
1	Blue Performance of NPA	4.01	.514	225	1				
2	Con. Policy	4.01	.575	225	.441**	1			
3	Con. Risk Assessment	3.99	.592	225	.524**	.312**	1		
4	Con. Risk Allocation	3.72	.713	225	.801**	.323**	.317**	1	

5	Con. Project Evaluation	4.03	.598	225	.761**	460**	.336**	.445**	1

Source: *Researchers' Computation (2026)*

A preliminary analysis was illustrated in the table 1 using standard deviation of the data. The postulation is that a minimal standard deviation that is relatively close to zero suggests that data points are strongly clustered around the mean, while a greater standard deviation indicates that data points are more dispersed from the mean. Therefore, the results in the table 1 signify that the standard deviation is between 0.514 and 0.713 as this has confirmed good confidence and prescription.

The correlation matrix in the Table 1 further describes the association among the variables in the study. However, the results do not suggest prediction but to understand the interactions among the variables using Pearson correlation statistical analysis at $^{**}p < 0.01$. In the table 1, blue performance of NPA which is dependent variable is significantly correlated with the four elements of Concession variables such as Concession policy = $.441^{**}$ $p < 0.01$, Concession risk assessment = $.524^{**}$ $p < 0.01$, Concession risk allocation = $.801^{**}$, $p < 0.01$, and Concession project evaluation = $.761^{**}$, $p < 0.01$. Similarly, the association among the four predictor variables (Concession policy, Concession risk assessment, Concession risk allocation, and Concession project evaluation) was positive and significant between $.312^{**}$ $p < 0.01$, and $.460^{**}$ $p < 0.01$. In view of the level of association between dependent and independent variables, and among independent variables as shown in Table 1. A Wilk's Lambda test was carried out and the p-values for all the variables were greater than 0.05 indicating a normally distributed data.

Table 2: Variance Inflation Factor and Tolerance for the Independent Variables

Independent Variable	VIF	Tolerance	Interpretation
Con. Policy	1.333	0.750	No multicollinearity problem
Con. Risk Assessment	1.206	0.829	No multicollinearity problem
Con. Risk Allocation	1.316	0.760	No multicollinearity problem
Con. Project Evaluation	1.486	0.673	No multicollinearity problem

Source: *Researchers' Computation (2026)*

Multicollinearity was examined using the intercorrelation matrix, tolerance statistics, and Variance Inflation Factor values. The correlation coefficients among the independent variables were all below the commonly accepted threshold of .70, indicating that the predictors were not highly interrelated. This initial evidence was further supported by the VIF and tolerance results in Table 2, where the VIF values ranged from 1.206 to 1.486 and the tolerance values ranged from .673 to .829. Since the VIF values were well below the recommended cut-off point of 5 and the tolerance values exceeded the minimum threshold of .10, the findings indicate that multicollinearity was not a serious concern in the regression model.

4.2 Hypotheses Testing

Table 3: Model Performance for the Regression Model for the Hypotheses

H_{0S}	Predictors	N	R	R^2	B	Std. Error	F	*T*	*p* value	Decision
H_{01}	Con Pol	225	.441	.195	.394	.463	53.850	7.339	<.001	Rejected
H_{02}	Con RAS	225	.524	.274	.454	.439	84.188	9.175	<.001	Rejected
H_{03}	Con RAL	225	.801	.641	.578	.309	397.928	19.948	<.001	Rejected
H_{04}	Con PEV	225	.761	.579	.654	.335	306.313	17.502	<.001	Rejected

Source: *Researchers' Computation (2026)*

Table 4: Multiple Linear Regression Coefficients for Blue Economy

	B	B	T	Sig.	R	R^2	F	*p* value
Con Pol	-.005	-.005	-.198	.843				
Con RAS	.175	.202	7.854	<.001				
Con RAL	.386	.535	19.924	<.001	.938	.879	401.411	<.001
Con PEV	.393	.417	16.040	<.001				

Keywords: Con = Concession, Pol = Policy, RAS = Risk Assessment, RAL = Risk Allocation, PEV = Project Evaluation

Source: *Researchers' Computation (2026)*

In Table 3, the regression analysis showed R coefficient of 0.441 (hypothesis 1); 0.524 (hypothesis 2); 0.801 (hypothesis 3); and 0.761 (hypothesis 4). These statistical values demonstrated a strong and positive association between predictor variables such as concession policy, risk assessment, risk allocation, and project evaluation with dependent variable as blue economy performance of NPA. The R-Square values of 0.195; 0.274; 0.641; and 0.579 established that only maximum of 19.5% of the variants in the blue economy performance of NPA could be explained by concession policy while other factors that were not considered in this study could represent 80.5%. In the case of hypothesis 2, the R-Square value of 0.274 signified that a maximum of 27.4% of the variant in the blue economy performance of NPA is what concession risk assessment could account for, while the remaining 72.6% represented other factors that were not mentioned in this study. Similarly, the R-Square value of 0.641 demonstrated that a maximum of 64.1% of the variant in the blue economy performance of NPA is what concession risk allocation could account for, while the remaining 35.9% represented other factors that were not discussed in this study. In addition, the R-Square value of 0.579 indicated that a maximum of 57.9% of the variant in the blue economy performance is as a result of concession project evaluation, while the remaining 42.1% could represent other factors that were not mentioned in this study.

The F-statistic value of 53.850, $p<.05$; 84.188 $p<.05$; 397.928, $p<.05$; and 306.313, $p<.05$ signified the goodness of fit of the models to describe all the variants and to consider the four null hypotheses rejected. Therefore, this has established the reason why the alternative hypotheses of this study should be considered suitable and accepted. The Beta (β) values of .0.394; 0.454; 0.578; and 0.654 also confirmed the significant and positive association between the predictor variables and observed variable. The value of $t=7.339$ $p<.05$; $t=9.175$, $p<.05$; $t=19.948$, $p<.05$; and $t=17.502$, $p<.05$ showed that concession policy, risk assessment, risk allocation, and project evaluation have positive and significant effect on blue economy performance.

The Breusch-Pagan test was conducted on the residuals of the regression model to examine whether the assumption of homoscedasticity was satisfied. The test evaluates whether the variance of the residuals is constant across the combined explanatory variables in the model. The result produced a p-value greater than 0.05 (BP = 2.315, p = 0.128) which indicates that there is no evidence of heteroscedasticity.

However, segregating the individual contributions of predictor variables in Table 4, the regression result produced a high coefficient of determination, with $R^2 = .879$, indicating that the concession-related predictors jointly explained 87.9% of the variation in Blue Performance of NPA. Although this represents a strong explanatory capacity, the result does not necessarily indicate overfitting. Given the sample size of 225 and four predictors, the model has an adequate observation-to-predictor ratio. Furthermore, the adjusted R^2 value of approximately .877 is very close to the reported R^2, suggesting that the model's explanatory power is not artificially inflated by the inclusion of irrelevant predictors. The difference between R^2 and adjusted R^2 is only about 0.002, which is very small. This suggests that the model's explanatory power is not substantially inflated by the inclusion of unnecessary predictors.

5. Discussion of Findings

This study was carried out to evaluate concession and blue economy performance using Lagos Ports Complex (LPC) and Tin Can Island Port (TCIP) as reference points. The study reveals that concession policy, risk assessment, risk allocation, and project evaluation have positive and significant effect on blue economy performance. This is consistent with St. Pier, Ahmadov, and Guliyev, (2025) as well as Platias et al., (2025) who called for more inclusive concession policy reforms to address blue economy concerns. The findings is also consistent with Piterska, Samoilovska, Shakhov and Tanaka, (2023) as well as Fathi and Shrestha, (2022) who identified risk assessment as critical success factors that are useful for improving competitiveness and stakeholder interactions in concessioned ports. The findings support Jiang, Yang, Jiang, Martek and Gao, (2022) who identified risk allocation as a crucial stage in concession risk management whereby risk is allocated to the party best suited to controlling and managing it. According to Almuhisen, Gökçekuş and Çelik (2023), this is necessary to prevent disproportionate liability on one partner in concession projects. The findings also support Piterskaa, Samoilovskaa, and Adakhovskyia, (2023) as well as Wasono, Sanny, Olfebri, and Malisan, (2026) who studied concession project evaluation in ports and established framework for identifying risks that alter stakeholder preferences during implementation.

While the findings of this study have demonstrated that concession have significant and positive influence on blue economy performance of NPA. However, segregating the individual contributions of concession components statistically revealed that concession risk allocation has the highest contribution, followed by concession project evaluation, concession risk assessment,

while concession policy has the lowest contribution. However, previous studies have not adequately disintegrated the components of concession in the area of blue economy performance. Therefore, the outcomes of this study have proved that concession can serve as strategic tool to deliver blue economy performance of maritime agencies like the Nigerian Ports Authority. This is consistent with Fathi and Shrestha, (2022) whose study ranked critical risk and success factors for concession projects, and found risk allocation at number one position. Also, Rybnicek, Plakolm, and Baumgartner, (2020) proffered strategies for mitigating concession risk allocation challenges to deliver benefits that will enhance the achievement of blue economy objectives. While broad concession policy is needed to frame blue economy initiatives, its daily contribution to project execution often ranks lowest, as operations are governed heavily by specific contracts rather than broad policy (Wuwung et al., 2022). This may explain the low ranking of concession policy in the study. However, with identification of individual contributions of the concession components, the study can create a framework for concession risk appraisal in Nigeria's blue economy.

6. Conclusion and Recommendation

The study concludes that concession components such as policy, risk assessment, risk allocation, and project evaluation should be strategically employed by government agencies like Nigerian Ports Authority to enhance blue economy performance. Consequently, the study recommends the development of comprehensive risk allocation frameworks that offer clear and transparent risk assessment and allocation for concession agreements. This involves precisely delineating the roles, responsibilities, and expectations of both public and private partners, alongside implementing mechanisms for effective dispute resolution. The study also recommends the strengthening of project evaluation mechanisms for long-term financial viability, environmental sustainability and risk mitigation in concession agreements. This functions by improving asset tracking, enforcing regulatory compliance, and aligning port infrastructure goals with private investments, leading to sustainable blue economy performance.

7. Limitations and Directions for Future Study

This study utilised data generated from ports located in Western Zone of Nigeria's marine and blue economy sector for analysis. Future studies may consider data generated from ports located in Eastern Zone. This will make for comparative analysis and provide a holistic view of concession and blue economy performance of Nigerian Ports Authority.

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