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Original Article

The Moderating Effect of Information and Communication Technology on Sustainable Procurement Practices and Project Performance of Multilateral Development Banks Implementation Units in South-South, Nigeria

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Abstract: *This study investigated the moderating effect of Information and Communication Technology (ICT) on the relationship between sustainable procurement practices and project performance of multilateral development banks (MDBs) project implementation units (PIUs) in South-South Nigeria. The study adopted a sequential explanatory mixed-method research design. Primary data were collected through structured questionnaires (closed and open-ended) for both quantitative and qualitative strands. The population comprised 17 MDBs PIUs across six South-South states implementing live projects as of December 2023. Respondents for the quantitative strand included 114 team members of the PIUs, while the qualitative strand engaged three focus groups with 18 participants to further explore the quantitative findings. The hypotheses were tested using the Pearson Product Moment Correlation formula, while partial correlation assessed the moderating role of ICT. Findings revealed that ICT significantly moderates the relationship between sustainable procurement practices and project performance of MDBs PIUs in South-South Nigeria. The qualitative results further confirmed the quantitative findings, strengthening the evidence of ICT's critical role. The study concludes that ICT plays a significant moderating role in enhancing the relationship between sustainable procurement practices and project performance of MDBs projects in South-South Nigeria. It therefore recommends that organizations should prioritize ICT adoption and integration when implementing sustainable procurement practices, both in the public and private sectors of developing economies like Nigeria. This will help achieve continuous improvement and support the attainment of the United Nations Sustainable Development Agenda 2030.*

Keywords: *ICT, Sustainable Procurement Practices, Project Performance, Cost Delivery, Quality Delivery, And Multilateral Development Banks.*

I. INTRODUCTION

In today's global world, developing economies like Nigeria no longer depend on one developed Country's financial assistance. They are leveraging on the evolution of Multilateral Development Banks (MDBs) funded by three or more countries for smooth economic and sound growth, devoid of foreign countries' interference. The South-South geo-political zone in Nigeria is taking advantage of this emergence as the Multilateral Development Banks (MDBs) are internationally regulated with the sole aim of ending poverty and boosting the economic livelihoods of poor member nations through sustainable development projects. And one of the tools used to achieve this objective is by leveraging sustainable procurement and Information and communication technology. Information and communication technology is about the integration of technologies that enable access to information via telecommunications devices, including but not limited to computers, satellite systems, the internet, wireless networks, personal mobile phones, and other communication facilities (Food and Agriculture Organisation, 2024). It is a foundational technology of the 21st century, driving global economic and social development by enabling digital access, communication, and data management across various sectors and for a wide range of applications, from healthcare to education. The International Standard Organisation (ISO) (2017) defines sustainable procurement as a decision-making process that seeks to achieve an organisation's requirements in the form of goods, works, and services in the interest of the organisation and society in general, while ensuring that there is no negative environmental impact, if possible, or the environmental impact should be minimal. For the African Development Bank (AfDB) (2020) and The World Bank (2023) they both define sustainable procurement as the purchasing process organisations go through in practice to achieve value for money in the process of meeting their needs in a manner that considers the life cycle economic benefits to the organisation, while ensuring that society is not impacted negatively, and damage to the environment is minimized or eliminated if possible.

Therefore, sustainable procurement is a process of acquiring goods, works, and services in the best cost-effective manner with minimal environmental impact.

Project performance is the process of planning, executing, and managing project results by tracking performance and comparing the same to anticipated results to avoid negative outputs/outcomes (Jackson, 2020) or the process of implementing interrelated activities and getting feedback about the progress of the project and comparing the results against the anticipated project objectives/outcomes (Sinclair, 2013). Hence, Project performance is a comprehensive measurement of whether a project is achieving its objectives by comparing actual results to planned performance metrics, focusing on the project's scope, cost, and schedule. Consequently, this study examined the role of information and communication technology as a moderating factor on the relationship between sustainable procurement practices and project performance of Multilateral Development Banks Project Implementation Units in South-South, Nigeria.

A) Theoretical Framework

It is argued that the origin of the Resource-Based View (RBV) theory can be traced to the seminal work of Penrose (1959), 'The Theory of the Growth of the Firm'. Penrose viewed a firm as a set of unique internal resources through which they are differentiated from each other and is able to compete and grow. Rubin (1973) supported Penrose's view by arguing that a firm consists of a bundle of resources. However, Wernerfelt (1984) was the first to introduce a complete work on the RBV in which he also supported the view of Penrose that the firm consists of a bundle of unique resources. The reason for bringing RBV into this study is that the unique internal resources, like human, financial, information, and communication technology, amongst other organisational capitals, that an organisation possesses, are what it will employ first of all to reduce its sustainable procurement practices cost and gain a competitive advantage through improved project performance. Therefore, MDAs and their project implementation units should apply the knowledge of RBV when using information and communication technology as a moderating factor in managing their sustainable procurement practices and project performance.

II. LITERATURE REVIEW

A) Concept of Sustainable Procurement Practices

The United Nations Development Programme (UNDP) (2022) defines sustainable procurement as the application of a procurement process that ensures goods, works, and services procured are economical with the barest environmental outcome and most advantageous social impact. The African Development Bank (AfDB) (2020) and The World Bank (2023) both define sustainable procurement as the purchasing process organisations go through in practice to achieve value for money in the process of meeting their needs in a manner that considers the life cycle economic benefits to the organisation, while ensuring that society is not impacted negatively and minimising the damage to the environment. Arimie (2023), Sustainable procurement practices refers to the way and manner procurement activities are actually applied based on serially required steps from the front-end (including need identification and planning) all though to the back-end (including contract award and contract management) while incorporating sustainability considerations (planet/environment, people/social and profit/economic) at each stage of the procurement process in order to achieve best Value for Money in the course of delivering development objectives for the benefit of the present generation on a total life cycle basis without compromising the future environmentally.

A critical review of the above-stated sustainable procurement process and practice flow reveals that procurement planning, procurement specification, supplier selection, and contract management (including contract monitoring) are common elements of a sustainable procurement process, whose execution is based solely on the sustainable procurement practices applied.

According to Berry (2011), sustainable procurement practices has four (4) major objectives, namely, but not limited to; (i) reduce all negative impacts of goods, works or services all through their life cycle and across the entire project, (ii) reduce the demand and use of all resources, (iii) ensure that fair contract costs, terms and conditions are agreed on and upheld while meeting least ethical, human rights, employment standards and requirements, and (iv) promote diversity, equality and inclusiveness throughout a project. Its scope covers the Government and all its Ministries, Departments, and Agencies, all organisations outside the government procurement MDAs, but which derive at least 35% of the funds appropriated or proposed to be appropriated for any type of procurement with funding from the government. The Bureaus/Agencies for Public procurement also have as part of their functions, to periodically review the socioeconomic effect of the policies on procurement and advise the National/State Councils of public procurement on socioeconomic reengineering strategies through the approval of new policies. Unfortunately, at the National level, the Council of Public Procurement, which is empowered by law to make decisions on the socioeconomic procurement and sustainability-related issues, has yet to be constituted and inaugurated by the Federal Government since 2007 to date.

B) The Concept of Project Performance

The concept of project performance is a multifaceted and complex concept that is crucial to the success or failure of any project in both the public and private sectors of a country's economy. Syamil, Samosirb, and Heriyati (2021) and Project Management Institute (PMI) (2021) both agree that a project is an impermanent endeavor that strives to create special goods, services, or works. All projects have a start and a completion period. For Watkins, Meiers, and Visser (2012), performance is synonymous with results (products, outputs, outcomes, impacts, or a combination of results), but they are derived from inputs and activities of men, machines, materials, and money. Performance is the process of generating positive results within the context of a project (Mohamed, Abuazoom, Hanafi & Ahmad, 2017). It can also be described as the fulfillment and achievement of project-related activities when compared to the project plan as executed by a project team.

Performance in a project, on its part, is an idea that can be seen from the point of goods, works, and services produced or delivered during a definite period of time, based on the already stated project objectives. Effectiveness and efficiency are two key factors of performance, as performance encompasses the efforts of employees in relation to other factors of production to achieve effectiveness and efficiency (Kara, 2018). From the above, it can be seen that project performance is typically conceptualised from numerous perspectives, depending on the individual or organisation level of experience, knowledge, and or set objectives. Schwartz (2023) argues that project performance is the measurement of project metrics for the purpose of determining whether the project is progressing according to the plans and objectives, with the intent to ascertain the actual work done, note deviations, and make amends if need be. Furthermore, Ali, Musawir and Ali (2018) define project performance as signifies the extent to which a project's implicit and explicit results satisfy budget, timing, and operational objectives, technical specifications, and eventually, the organisational objectives of any client.

Consequently, the World Bank Procurement Guidance (2018) contract management practice also adopted cost, time, quality, and community satisfaction as a part of its global standard criteria for measuring project performance. Therefore, Project performance is a comprehensive measurement of whether a project is achieving its objectives by comparing actual results to planned performance metrics, focusing on the project's scope, cost, and schedule.

C) Quality of Delivery

The definition of quality has been a subject of debate among academics and practitioners, as the word 'quality' itself is subject to both actual measurement and perception. However, the ISO (2015) defines quality as "the totality of characteristics of an entity that bear on its ability to satisfy stated or implied needs". According to Chan (2001), the evaluation of quality is rather eccentric. Crosby (1980) defines quality as conformity to requirements, not goodness, as quality can only take on meaning when it is based on what the customer needs and conforms to the customer's requirements upon delivery. However, Juran (1974) defines quality simply as fitness for use. Quality is commonly the assurance that a product will meet the client's expectations. According to PMI (2013), quality entails fulfilling predetermined criteria, ensuring conformance, and eliminating subpar performances. This suggests that contemporary quality management techniques prioritize client satisfaction. This mixes fulfilling client needs with project objectives and usability. According to Jha and Iyer (2006), quality may be summed up as the capacity to either significantly conform to the customer's specifications or fulfill their expectations. Arimie (2023) defines quality of delivery as the extent to which goods, services, and works acquired meet and satisfy stakeholders' expected or predetermined specifications/standards. Consequently, procuring and receiving quality fit-for-use goods and services first-time-right is very important in project execution as its failure increases project time and correspondingly increases project cost; such as cost of complaint handling, inspection, testing, rework or rejection of defective goods and services, scrap, and warranty repairs.

D) Cost of Delivery

According to Bari, Yusuff, Ismail, Jaapar, and Ahmad (2012), cost is debatably a primary concern in any project, as poor cost performance in any project is a major worry to all contractors, project owners, and other stakeholders (Xiao & Proverbs, 2003). Fernando (2022) defines delivery as the conduct of transferring something of value by an implementer to a receiver as agreed in a contract on or before the maturity date.

According to Accounting Tools (2022), cost is the total expenses required to produce and sell goods, works, and services, or to procure assets. Cambridge dictionary (2022) defines cost as the total amount of money that is required to be spent to buy, make, hire/lease goods, works, or services, while the Mirriam-Webster dictionary (2022) defines cost as the money or its equivalent paid to acquire anything. Arimie (2023) defines the cost of delivery as the total amount of resources to be expended or actually expended to procure goods, services, and works or anything of value from conception to final delivery. However, before a project commences, the project owners will need to carry out a cost-benefit analysis, as defined by Landau (2021) as the process of estimating the costs and benefits of embarking on the identified project, enabling alternatives to be explored. Costs can be categorized into direct, indirect, intangible, opportunity costs, and the cost of potential risks. Hence, the cost of delivery in a project refers to all expenses incurred throughout the project lifecycle, from initial planning to final

implementation and handover. This broad category encompasses labor, materials, overhead, financial costs such as interest, and quality assurance, all of which are essential for successfully delivering the project's final output on time and within budget. Therefore, this review took a closer look at both, not limited to social, economic, and environmental benefits, and discovered that they can all be converted and measured monetarily in project delivery.

E) The concept of Information and Communication Technology

The use of Information Technology tools is today an essential component of our everyday lives at home and workplace (One Planet Network, 2023). Porat (1977) describes information as any comprehensible, recorded, and organised knowledge that is in written, printed, or numerical, oral, or audiovisual form that can be conveyed to another party through any means of communication. According to Mehrotra (n.d.), information is data that has been processed or any form of communication that provides understandable and useful knowledge to the person receiving it. Heward (2009) defines communication as the interactive exchange of information, thoughts, requirements, and yearnings. Madden (2000) opined that for any communication to take place, there must be a message to be sent, a sender of the message (authorial context), and a receiver(s) of the message who is expected to acknowledge receipt or respond appropriately to confirm that the message is well understood (receivership context). The United Economic and Social Commission for Asia and the Pacific (UNESCAP) (1989) define technology from the production perspective, as a blend of four parts namely; (i) the technological (hard and soft wares) amenities referred to as techno-ware, (ii) the human resources referred to as human-ware, (iii) the flow of information referred to as info-ware, and (iv) the organisation referred to as organ-ware. Sabardi (2008) opines that these four components are inseparable. So they are vigorously combined into a conversion process to enhance project performance globally, as the techno-ware is the savvy transformation tool that is developed and operated by the human-ware, which is a key factor that uses info-ware to perform certain transformation operations, including making decisions and operating techno-ware for the organ-ware to direct and control the human, info, and techno-ware.

Universally, there is no agreement by both scholars and practitioners on a single definition of information and communication technology. Brown (2022) defines information and communication technology as a range of technologies that comprise hardware, software, interaction technologies, and incidental services applied to generate, process, store, protect, and interchange data. However, Arimie (2023) defines information and communication technology as the combination of hardware, software, data-ware and people-ware for the purpose of receiving and processing data as inputs, using the processed output/information online/offline as knowledge for decision making/transmission through modern hi-tech channels of communication instantly or storing same for future use or for further use as data to others.

Hence, Information and Communication Technology (ICT) refers to the vast array of tools, resources, and systems used to transmit, store, create, share, and process information, encompassing hardware like computers and mobile phones, software, networks such as the internet, and communication services like video conferencing and email. It is a foundational technology of the 21st century, driving global economic and social development by enabling digital access, communication, and data management across various sectors and for a wide range of applications, from healthcare to education.

F) Sustainable Procurement Practices and Project Performance

Nangpiire, Gyebi, and Nasse (2024) in their study on Sustainable Procurement Practices and Organisational Performance of Small and Medium Enterprises in Ghana found and concluded that sustainable procurement practices have a relationship with performance. Ogunsanmi (2013) in his study of the Nigerian construction industry found and concluded that procurement process influences and impacts project performance, and this conclusion agrees with several other literatures in project management, including Hashim (1999); Rasid, Taib, Ahmed, Nasid, Ali & Zainordin (2006); Eriksson & Vennstrom (2012).

Though Ogunsanmi (2013) argues that the studies of Hashim (1999); Rasid et al. (2006); Eriksson and Vennstrom (2009) used different dimensions in a procurement process without commonality of dimension(s), Ogunsanmi (2013) further states that all the studies cited above all agree that procurement process affects project performance in terms of cost, quality and time. However, it is my opinion that the claim of Ogunsanmi (2013) that the studies above were without commonality in dimensions may not be correct, because of the terms and nomenclatures he used to categorise and describe them. In the final analysis here, it is imperative to state that Hashim (1999) dimension (ii) has commonality with Eriksson and Vennstrom (2012) dimension (i), which is procurement specification, while Hashim (1999) dimension (i) has commonality with Rasid et al. (2006) dimension (i), which is procurement planning. Furthermore, Hashim's (1999) dimension (iii) has commonality with Eriksson and Vennstrom (2012) dimension (iii), which is contract monitoring. Based on the above, this researcher is of the strong opinion that there is a commonality of dimensions between and amongst the studies of Hashim (1999), Rasid et al. (2006), and Eriksson and Vennstrom (2012).

G) The Moderating Role of Information and Communication Technology in the Relationship between Sustainable Procurement Practices and Project Performance

The study by Huang, Shi, Pena-Mora, Yujie Lu, and Charles (2020) examines how Information and Communication Technology (ICT) affects team Social Capital (SC) and the success of projects in the construction industry. The connections between various factors are modeled theoretically. This model takes into account the performance of building projects as well as two ICT capabilities (communality and connectivity) and two SC kinds (bridging and bonding). We used a survey with 221 questions to confirm the viability of our strategy. The findings show that while the hypotheses on the remaining variables are all significant, the hypotheses on the direct and indirect impacts between connection and bonding are not. In particular, bonding has a greater mediating influence on performance than bridging. By concentrating on how ICT use affects project-level team SC, this study adds to the literature on SC and managing construction projects. Additionally, this study has significance for comprehending how earlier modifications affected the performance of building projects. According to this study, managers can provide project participants with a compatible information platform, but the importance of ICT connectivity in fostering strong internal bonds should not be overstated. In order to balance bonding and bridging SC, managers also need to choose a variety of project organization members.

King'oo, Kimencu, and Kinyua (2020) looked at how networking skills affected Kenyan private university performance. The Resource-Based View hypothesis served as the study's foundation. It used a cross-sectional descriptive survey research design and was based on positivist research theory. The study included primary data gathered from faculty deans, registrar offices, finance, human resource managers, and ICT managers. Descriptive statistics (means, frequencies, and standard deviations) and inferential statistics (correlation and regression analysis) were used to analyze the data. The study established that private universities adopted networking capability only to a moderate extent (mean=3.39). There was a significant effect of relational trust (β=0.194; P=0.001), relational capability (β=0.079; P=0.000), relational strength (β=0.103; P=0.017), coordination within networks (β=0.106; P=0.010), and information sharing (β=0.278; P=0.000) on the performance of private universities. Initiation of business relationships (β=0.053; P=0.412) and learning for success (β=0.007; P=0.926) had no significant effect on university performance. Overall, the study found that networking skill significantly affects Kenyan private universities' success. According to the study's findings, private universities in Kenya should focus on developing, maintaining, and optimizing channels for information exchange, fostering stakeholder trust, enhancing inter-university relations, strengthening ties, and improving network coordination.

Mateus, Arthur, Márcia, Elisa, Giuliano, Almeida, and Alejandro (2017) investigated the interaction between the four Lean Product Development (LPD) practices of concurrent engineering, standardization, development for manufacturability, and factory layout focused on the impact of the families of products on organizational performance indicators and the use of information and communication technologies (ICT) as a moderating variable. This study uses hierarchical OLS regression and CFA to quantitatively analyze data from a survey of 48 Brazilian businesses that participated in the 2014 Brazilian Lean Conference. Our findings demonstrate that, when moderated by ICT, the lean practice of factory setup centered on product families has a considerable impact on the product development (PD) process, further suggesting that increased ICT use helps this practice and propels businesses toward performance gains. However, this study examines and interprets the moderating influence of information and communication technology on the relationship between sustainable procurement practices and project performance of multilateral development banks in the South-South geo-political zone of Nigeria. The following null hypothesis is formulated:

H01: Information and communication technology does not have any moderating influence on the relationship between sustainable procurement practices and project performance of multilateral development banks in the South-South, Nigeria.

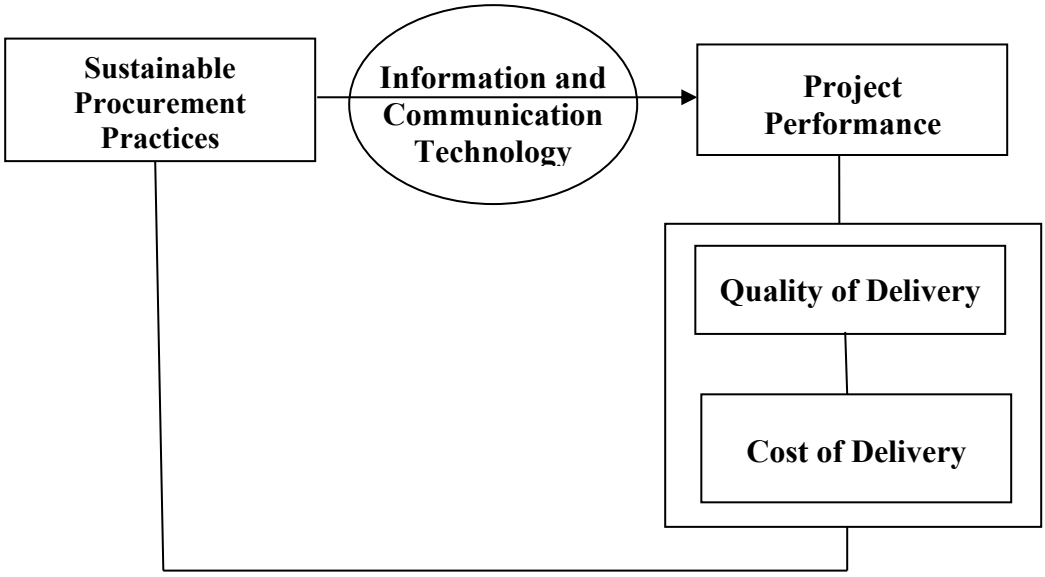

Figure 1: Conceptual Framework of the Moderating influence of Information and Communication Technology on the relationship between Sustainable Supplier Selection and Project Performance of Multilateral Development Banks Implementation Units in South-South, Nigeria

Sources: *Arimie (2023). Sustainable Procurement Practices and Project Performance of Multilateral Development Banks Implementation Units in South-South, Nigeria.*

III. METHODOLOGY

This study employed a sequential explanatory mixed methods (MM) design to investigate the moderating effect of information and communication technology on the relationship between sustainable procurement practices and project performance of multilateral development Banks in the South-South region of Nigeria.

Creswell and Creswell (2018) defined mixed methods research as an approach to research that involves the collection of both quantitative and qualitative data either concurrently or sequentially, integrating both databases, and applying distinct designs that may involve philosophical foundations and theoretical frameworks. According to (Denzin, 1970; Lincoln & Guba, 1985), methodical triangulation mixed method is applied in research to ensure consistency of findings through the use of different data collection methods, while data triangulation is applied to ensure consistency in findings using different data sources within the same method. Consequently, this researcher applied a mixed method to triangulate the data collected from the questionnaire and focused group discussions to support the trustworthiness of findings and also make suggestions for further research.

The population of this study consists of all (census method) the seventeen (17) Federal and State Government Multilateral Development Banks (MDBs) project implementation units (PIUs) that are, as at the time of this study, executing or implementing live projects within the South-South geo-political zone of Nigeria on behalf of the MDBs. This current study thus surveyed the entire population. Quantitative data were collected using a closed-ended questionnaire as an instrument, which was completed freely by the respondents under the same conditions (Bryman & Bell, 2011), while qualitative data were collected through focus group discussions.

The content validity of the questionnaire for this study was confirmed through the combined processes of logical validation and opinions from procurement and project management specialists. According to Black and Champion (1976), "where there is a degree of relationship between the property being measured and the other specified variables, construct validity is said to exist". Accordingly, the multivariate analysis on the moderating effect of information and communication technology on the relationship between sustainable procurement practices and project performance constructs provided evidence of construct validity in this study (Kiabel, 2007). The internal consistency of the measurement items was verified through the Cronbach's Alpha test of reliability with a threshold of 0.70 as set by Nunnally (1978). Information and communication technology, sustainable procurement practices, and project performance were all measured by five (5) items on a Likert five-point scale, respectively. The result of the test of reliability showed a Cronbach's Alpha coefficient of 0.869, 0.814, and 0.795 for information and communication technology, sustainable procurement practices, and project performance,

respectively. The study used the Pearson Product-Moment Correlation as the test statistic. All analyses were done using SPSS version 25.0.

The qualitative method of data collection is described by Fleetwood, 2023 as the process of data collection from a small but carefully selected group of participants who freely shared their experiences and knowledge in open discussions in the course of research. Consequently, on the qualitative aspect of this study, focus group discussions were conducted using a structured but open-ended protocol/guide as an instrument for data collection from the PIU teams in the Ministries, Departments, and Agencies of Government, as a follow-up to the data collection, analysis, and interpretation/findings from the quantitative aspect of this study in phase one. The essence of the qualitative aspect was to help explain any confusing, conflicting, or strange results from the quantitative aspect. Already prepared a qualitative guide/protocol with open-ended questions, and the audio recording of each session, and taking notes were done. The audio data collected was transcribed from audio to text with the aid of technology for higher accuracy and efficiency sake, and then the data was transcribed and analyzed alongside notes that were taken by the moderator and assistant moderator during the focus group sessions using the Microsoft Office Word package. The focus group discussions were held with three (3) project implementation units that were purposively selected, with each team having five (5) participants, and the sum total number was fifteen (15) participants. All the focus group discussions were held in the conference/meeting rooms of the various project implementation units. The composition of the teams/officers in the team is the same as they are made up of the Team leader, Accounts/Finance, Monitoring and Evaluation, Environmental/Social, and Procurement and Environmental/Social safeguard officers. These officers are the key officers in each project whose functions are directly related to this study.

Table 1. Reliability Coefficients of Variable Measures

S/No	Dimensions/Measures of the study variable	Number of items	Cronbach's Alpha	Comment
1	Information Communication Technology	5	0.869	Reliable
2	Quality of Delivery	5	0.745	Reliable
3	Cost of Delivery	5	0.809	Reliable

Source: *SPSS Output, 2023*

The reliability of the qualitative research instrument (Focus Group Discussions guide/questions) for this study, which was drawn up after the quantitative data of the study were retrieved, analysed, and interpreted, was not pretested but was examined by experts in procurement and project management and found to be okay. Creswell and Creswell (2018) argued that there is a need to get independent inter-coders to 'cross-check codes' after extracting some passages in the text from your transcribed data, and then cross-check them against the result of the researcher independently, and see the extent of their agreement and disagreement.

IV. RESULTS

The result of the quantitative strand is presented below as follows:

In generating the data on the operationalized variables, the study used a 5-point Likert scale instrument. Therefore, in interpreting the mean values, the study is relying on Ahiauzu and Asawo's (2016) categorization of responses with mean (x), thus: $1 < x \leq -2.5$ = low; $2.5 < x \leq 3.5$ = moderate; $3.5 < x \leq 4.5$ = high, and $4.5 \geq x$ = very high. In order to ascertain the responses on technology, the measure, namely, information and communication technology, is measured on a set of multi-item instruments, all scaled on a five-point Likert scale, and are presented.

Table 2. Descriptive Statistics for Information and Communication Technology

	N	Min	Maximum	Mean	Std. Deviation
To what extent do you rate the level and availability of ICT infrastructural advancement in this project?	114	2	5	4.15	.736
To what extent has lack of ICT knowledge amongst your team members hindered the use of technology in this project?	114	1	5	4.05	.969

To what extent has the adoption of ICT facilitated and improved the qualities of information flow/sharing between and amongst your project team members and other external stakeholders?	114	2	5	4.11	.804
To what extent has ICT helped your project team to monitor your procurement process/practices and project performance?	114	2	5	4.21	.682
To what extent has the integration of ICT into your procurement practice facilitated opportunities for improved project performance?	114	2	5	4.22	.747
Valid N (listwise)	114				

Source: *SPSS Output*

The data in Table 2.1 illustrates that there is a high level of affirmation (where x > 2.50) as regards the indicators of information and communication technology, which is a measure of technology. With indicators designed to assess respondents' perceptions of information and communication technology through its indicators, the construct looked at the context and applications of ICT inside the target companies. The minimal answer difference (SD < 2.00) further supports the findings, which support all five information and communication technology indicators within the target firms. The implication of these responses is that the respondents are strongly of the opinion that information and communication technology is an observed phenomenon in their projects and hence is largely within the range of agreement on the scale.

Table 3. Descriptive Statistics for Information and Communication Technology

	N	Minimum	Maximum	Mean	Std. Deviation
Information and Communication Technology	114	2.80	5.00	4.1485	.48625
Valid N (listwise)	114				

Source: *SPSS Output*

Table 3 illustrates the descriptive statistics for measures of technology, which is information and communication technology, with mean scores of 4.14. The implication of this is that most respondents fell within the agreement range of the scale, indicating that technology is a commonly observed phenomenon in multilateral development bank projects in the South-South geopolitical zone.

Table 4: Summary of Multivariate Analysis of the assumed role of information and communication technology as a moderator in the relationship between sustainable procurement practices and project performance of multilateral development banks' project implementation units in South-South, Nigeria.

The Decision rule is that if the difference between the zero-order correlation and the controlled correlation < 0.01, then there is no significant difference, and the null hypothesis is accepted. If not, it will be rejected.

Table 4. Partial Correlations for the effect of Information and Communication Technology on the Study Variables

Control Variables			Sustainable Procurement Practices	Project Performance	Information and Communication Technology
-none-[a]	Sustainable Procurement Practices	Correlation	1.000	.819	.132
		Significance (2-tailed)	.	.010	.020
		Df	0	112	112
	Project Performance	Correlation	.819	1.000	.120
		Significance (2-tailed)	.010	.	.030
		Df	112	0	112

	Information and communication Technology	Correlation	.132	.120	1.000
		Significance (2-tailed)	.020	.030	.
		Df	112	112	0
Information and communication Technology	Sustainable Procurement Practices	Correlation	1.000	.207	
		Significance (2-tailed)	.	.016	
		Df	0	111	
	Project Performance	Correlation	.707	1.000	
		Significance (2-tailed)	.016	.	
		Df	111	0	
a. Cells contain zero-order (Pearson) correlations.					

***Source**: SPSS Output version 23.0*

RQ: To what extent does information and communication technology moderate the relationship between sustainable procurement practices and project performance of multilateral development banks' implementation units in South-South, Nigeria?

Regarding this research question, Table 1 presents the zero-order correlation between information and communication technology and the study variables, indicating the correlation coefficient when information and communication technology do not moderate the variables. This correlation is positive and very strong, with a value of 0.819. The partial correlation controlling for information and communication technology, however, is also strong with r value of 0.707. The observed positive "relationship" between sustainable procurement practices and project performance is due to the underlying relationships between each of the variables and information and communication technology. Therefore, information and communication technology has a positive and strong effect on the relationship between sustainable procurement practices and project performance of multilateral development banks' implementation unit projects in South-South, Nigeria.

H_{O1}: Information and communication technology does not significantly moderate the relationship between sustainable procurement practices and project performance of multilateral development banks implementation units in South-South, Nigeria.

From a critical examination of the zero partial correlation, we found that the relationship between sustainable procurement practices and project performance is positively correlated with information and communication technology, serving as the control variable. The correlation between the other two variables decreased to 0.807 and became significant at $\alpha = 0.05$ when the influence of this control variable was eliminated. The null hypothesis is rejected and the alternative is sustained since the difference between the zero-order correlation and the controlled correlation $(0.819 - 0.707) = 0.112 > 0.01$, according to the decision rule. Therefore, it is concluded that information and communication technology significantly moderates the influence of sustainable procurement practices on the project performance of multilateral development banks' implementation unit projects in South-South Nigeria.

The result of the qualitative strand, with regard to the question "How does the use of ICT affect your project performance?" is presented below as follows:

The application of information and communication technology to moderate the relationship between sustainable procurement practices influences project performance through effective and efficient communication. These can be seen in the statement of Participants 2 and 5 in focus group 1, who explained thus:

Participant 2 in **focus group discussion 1** declared that "the use of ICT affects our project positively through effectively and efficiently communicate", and Participant 5 stated thus: "though sometimes network can be very bad around here [their office], on the whole it (ICT) affects our project performance through increased speed on our work and helps to reduce cost of movement".

Correlating the focus groups: Participant 10, in **focus group 2** agreed with Participant 2 in **focus group discussion 1** in the areas of efficiency by stating thus:

"the use of ICT has improved our operations and project cost and time performance through improved communications amongst us as a team, and also to others outside [including host community]", while Participant 9, in **focus group 2** agreed with Participant 5 in focus group 1 by stating thus: *"the use of ICT affects our project performance through faster communication in terms of time and also drastically minimise our cost of movement for meetings"*.

From the above, it is observed here that the moderating influence of ICT on sustainable procurement practices affects project performance, through reduced cost of monitoring and increase in speed influences project performance in the areas of cost, time and host community participation but did not say how it influences quality in multilateral development banks projects in the South-South geo-political zone.

V. DISCUSSION

The findings from both the quantitative and qualitative strands as presented in table 1 above reveals that information and communication technology significantly moderates the relationship between sustainable procurement practices and project performance of multilateral development banks implementation units in South-South geo-political zone of Nigeria. Our findings concurs with the findings of Huang, Shi, Pena-Mora, Yuj ie Lu, and Charles (2020) in their empirical study the moderating impact of information and communication technology (ICT) on team social capital (SC) and project performance in China and the United States as they found and concluded that ICT significantly influences project performance.

Our finding again agrees with the findings of King'oo, Kimencu, and Kinyua (2020) in their empirical analysis of the effect of information technology capability on the performance of private Universities in Kenya. They concluded and recommended that Information Technology capability significantly affects performance. Therefore, private universities in Kenya should map their IT capabilities to enable them to improve their infrastructural performance, such as having well-equipped computers. Also, our study is in line with Mateus, Arthur, Márcia, Elisa, Giuliano, Almeida and Alejandro, (2017) who in their study of the moderating effect of Information and communication technology on Lean Product Development's impact on performance found that the proper choice and selective application and better use of modern ICT devices improves performance.

VI. CONCLUSION AND RECOMMENDATION

Based on the findings of this study, this study concludes that Information and Communication Technology as a contextual factor, moderates the relationship between Sustainable Procurement Practices and Project Performance. We therefore conclude that Information and Communication Technology, as a contextual factor, moderates the relationship between Sustainable Procurement Practices and Project Performance of multilateral development banks project implementation units in South-South, Nigeria. Consequently, we recommend that organisations in both the public and private sectors of developing countries like Nigeria and all over the world should always adopt and apply Information and Communication Technology as a moderating factor in all their projects for improved project performance and to enable them achieve the globally agreed United Nations sustainability Agenda set for year 2030.

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