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## **FUNCTIONAL DESIGN AND EFFECTIVENESS OF CONSTRUCTION COMPANIES IN SOUTH-SOUTH REGION OF NIGERIA**

**BY**

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### **ABSTRACT**

This study examined the relationship between functional design and effectiveness of construction companies in south-south region. The study adopted the survey research design. The population of this study is 195 employees of the 6 construction companies operating within the South-South region of Nigeria. A sample size of 131 was determined using the Taro Yamen formular. The Cronbach Alpha statistic was used to obtain a value of 0.70 as the instrument reliability ratio. The data set was first subjected to normality test for the residual term using the Jarque-Bera Statistic, but the result revealed that the normality assumption was not fulfilled; hence the introduction of nonparametric statistics (Spearman rank correlation and Theil-Sen regression) became imperative. The research questions were answered with Spearman rank correlation statistic so as to establish the relationship between the dependent and independent variables in the study. The hypotheses were tested with Theil-Sen regression technique so as to measure the “significance” of the degree of relationships existing between the dependent and independent variables. The analysis was enabled by the use of SPSS, RStudio and Eviews software packages. The results of the study showed that functional design have a moderate and very high significant relationship accordingly on quality service and timeliness of contract completion of construction companies in South-South region of Nigeria and as such the study recommends among others that management of construction firms should ensure that functional design is used as one of their organizational design tool as it enhances timeliness of contract completion.

**Keywords:** Functional Design, Effectiveness, quality service delivery, timeliness, contract completion

## Introduction

The design of an organization has a substantial impact on its effectiveness all over the world. The goal of organizational design is to establish a functional organization that is both time and environment sensitive. A functional design is one that groups together similar or related occupational specializations. It is the functional approach to departmentalization that is used throughout the organization. This style provides an efficient structure and allows for economies of scale of preference because specialists work for the entire organization (Cornelis, 2019; Masoud, 2021). Tasks and activities in a functional design are organized by company function, such as production/operations, finance/accounting, marketing, research and development, human resources management, and management information system (Kalu, 2016).

Effectiveness is defined as the proficiency with which a firm can meet its objectives by meeting the planned outcome without waste or within minimum use of energy, money, labor and time resources (Lunenburg, 2012). Effectiveness is also viewed as the extent to which an organization's main tasks are accomplished and finalized with the construct of effectiveness being compactly associated with successful organization's performance (Kafashpoor, Shakoori, & Sadeghian, 2013). Effectiveness is the power to produce the desired result (Pinprayong & Siengtai, 2012). The dimensions of effectiveness this study examines include; quality of service delivery and timeliness contract completion indicators of effective organization. According to Demir (2020), quality service delivery is the physical access or reaches ability of services that meet a base standard in an organization. Quality service delivery is a continuous, cyclic process for developing and delivering user focused services. It is further defined in four stages as user engagement, service design and development, quality service delivery and lastly assessment and positive change of service (Ali et al, 2016). Babatunde (2021) quality service is defined keeping in mind the following perspectives Excellence - Although the mark of an uncompromising investor and high achievement, the attributes of standard may change dramatically and rapidly. Standard is often externally defined.

Timeliness contract completion refers to the time expectation for accessibility and availability of finish contract. Timeliness can be measured as the time between when project is expected and when it is readily available for use. The success of business applications relying on master data depends on consistent and timely information (Olowokure et al, 2015). Timeliness of project is one the most important aspects of contraction firms. Therefore, it is the duties of contract manager to plan and manage it contract effectively. Based on the search made by the researcher on functional design, this study investigates the relationship between functional design and effectiveness in construction companies in South-South region of Nigeria and also to moderate the impact of contextual factor on the association between functional design and effectiveness in construction companies in South-South region of Nigeria.

## Statement of the Problem

In Nigeria, Construction companies may have faced a number of ineffective organizational challenges, such as substandard roads, high material costs, negative financial returns, an increase in the exchange rate, insufficient or lack of project planning, insufficient funding, kickbacks, poor quality control, a lack of communication, political instability and corruption, and worker insecurity. The situation led to some construction companies to liquid in their operations in Nigeria. According to Chineme et al (2017), many organizations in Nigerian and around the world are faced with the problem of determining if functional design is determinant factor for effective organization. These problems include; challenge of keeping the works together due to information and communication technology, differences in organizational structure and the competitive nature of the environment. Therefore, there is a need to determine if the way organization is designed has an impact on effective organization.

Previous studies had shown a correlation between functional design and effectiveness. However, there has been mixed results, some reported a significant correlation between functional design and effectiveness while others did not support a direct positive relationship between this two variables. Functional design has a positive and significant impact on organizational effectiveness (Nwonu et al, 2017). On the contrary, other studies argued that functional design is now the trend to increase the effectiveness of the organization. Based on these mixes results, hence, this study investigated the relationship between functional design and effectiveness in construction companies in South-South region of Nigeria.

## Research Questions

The study was guided by the following research questions:

- i. What is the relationship between functional design and quality service?
- ii. To what extent is the relationship between functional design and timeliness contract completion?

## Research Hypotheses

The following null hypotheses were tested in this study:

- Ho<sub>1</sub>:** There is no significant relationship between functional design and quality service;
- Ho<sub>2</sub>:** There is no significant relationship between functional design and timeliness contract completion;

## Review of Related Literature

### Operational Conceptual Framework

A conceptual framework, according to Adom et al (2018), is a logical assistance in the form of a diagram that a researcher uses to visually demonstrate thoroughly the interaction

between indicators of the independent variables (which were researched) and the dependent variable. Scholars utilize the conceptual framework diagram to have a better grasp of how the study's predictor factors are related to the response variable (Grace, 2021). In this study, the independent variable is functional design, while the dependent variable is effectiveness, which was measured in terms of quality service and timeliness contract completion, as shown in Fig. 1

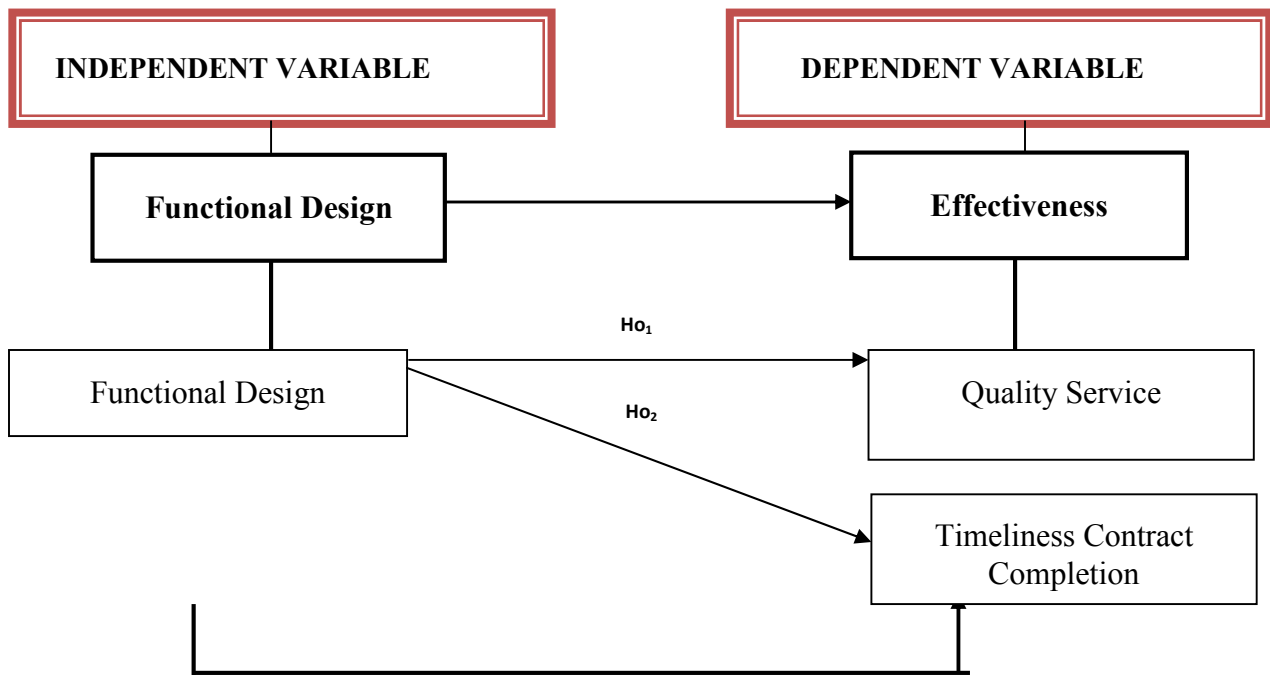


Figure 1 Operational Conceptual Framework Showing functional Design and effectiveness in construction companies in South-South Zone of Nigeria.

Source: Researchers Desk 2023

## Conceptual Review

### Functional design

A functional design is one that groups together similar or related occupational specializations. It is the functional approach to departmentalization that is used throughout the organization. This style provides an efficient structure and allows for economies of scale of preference because specialists work for the entire organization (Cornelis, 2019; Masoud, 2021). Tasks and activities in a functional design are organized by company function, such as production/operations, finance/accounting, marketing, research and development, human resources management, and management information system (Kalu, 2016). This type of design sorts personnel based on their specialized abilities and job tasks and is best suited for smaller businesses or those that focus on a single product or service. In general, all functional heads will report directly to the company president, managing director, or CEO, whichever is appropriate. According to Griffin (2014), such a function is not intended to change rapidly, but rather to

create a stable environment in which corporate plans are less likely to require adjustments or updating. The functional organizational design is the dominant mode of organization in larger companies, since these entities deal with such large sales and production volumes that no other form of organizational design would be nearly as efficient. It is particularly effective in the following situations: (i) large volume of standardized product or service sales; (2) reduced level of change within the industry; (3) large fixed asset base; (4) minimal amount of entirely new product line introductions; (5) minimal changes due to fashion or other changes in taste or technology; and (6) Competition is primarily based on cost (Kalu, 2016).

Functional design brings efficiency into the operations of the business seems most important. When employees are allowed to focus on one specific functional area to the exclusion of all else, they can achieve significant efficiencies in terms of process flow and management methods. As a principal advantage, it seems logical to have a department that consists of experts in a particular field such as accounting or product (Gibson et al, 2003). By having departments of specialists, management creates efficient units. An engineer is generally more efficient when working with other engineers and other individuals who have similar backgrounds and interests (Nosike et al, 2021; Okoro et al, 2019). They can share expertise to get the work done. Besides, there is a very clear chain of command in this design, so everyone knows what decisions they are allowed to make and who to report to and the number of employees reporting to you. With functional design, it is easier to set career paths and programmes for employees (and implement them through promotions) and monitors their progress toward the goals outlined for their functional areas (Kalu, 2016; Nosike et al, 2021). According to Anthony and Govindarajan (2004), the basis for the functional design of organisation is on the idea of a manager who brings specialised knowledge to bear on decisions related to a specific function as contrasted with the general purpose manager who lacks the specialised knowledge (Faruk & Gary, 2016)

### ***Effectiveness***

Effectiveness is the process by which an organization optimizes its resources and capabilities in order to achieve both short-term and long-term objectives (Mohamad et al., 2017). Meeting corporate objectives, adapting to a changing environment, and surviving in the future are all examples of effectiveness (Latifi & Shoostarian, 2020). Similarly, Ajagbe et al. (2016) argued that effectiveness means short-term productivity, efficiency, and job satisfaction, medium-term adaptation and development potential, and long-term sustainability. According to Richard et al. (2009), effectiveness encompasses organizational performance as well as the myriad internal performance outcomes normally associated with more efficient or effective operations, as well as other external measures relating to considerations other than economic valuation, such as corporate social responsibility.

Lee (2020) defined organizational effectiveness as organizational members' perceptions of the organization's overall success, market share, profitability, growth rate, and innovativeness

in contrast to significant competitors. According to Latifi and Shooshtarian (2020), effectiveness is much more than your company's capacity to create sales or turn a profit. Rather, it focuses on long-term effectiveness, as well as sustainability, environmental concern, corporate culture, people management, leadership, innovation, strategy, engagement, and communication. Organizational performance necessitates a more comprehensive approach. "Effectiveness" means different things to different businesses, but in the twenty-first century, it signifies survival and a competitive advantage (Mihaicz, 2012).

Common measures of the organizational performance are effectiveness and efficiency (Ilona & Evelina, 2013). For managers, suppliers and investors these two terms might look synonymous, yet, according to Suri, (2020), each of these terms have their own distinct meaning. Most organizations assess their performance in terms of effectiveness. Their main focus is to achieve their mission, goals and vision. At the same time, there is plethora of organizations, which value their performance in terms of their efficiency, which relates to the optimal use of resources to achieve the desired output (Chavan, 2009). The question is, whether there is a difference if the organization is effective yet inefficient and visas versa. Also, is it important for the entities to understand the disparity?

Previous studies have shown that effective is shaped by setting clear objectives, securing environmental resources, having efficient and harmonious internal procedures (Manoharan & Singal, 2019). Besides, opinions, feedback, and perspectives from its current strategic stakeholders are also necessary to gain more perspectives and criteria about what so called organizational effectiveness. According to Manoharan and Singal (2019), the level of satisfaction resulting from organizational effectiveness can be measured.

### **Dimensions of Effectiveness**

The dimensions of effectiveness this study examines include; quality of service delivery, timeliness contract completion and goal attainment indicators of effective organization.

#### ***Quality Service Delivery***

According to Demir (2020), quality service delivery is the physical access or reaches ability of services that meet a base standard in an organization. Quality service delivery is a continuous, cyclic process for developing and delivering user focused services. It is further defined in four stages as user engagement, service design and development, quality service delivery and lastly assessment and positive change of service. The later regularly requires detail as far as the components of service delivery. Service delivery denotes the ability of the client to pay for the services where data can be collected by facility visits or by household interviews. In this study, quality service delivery was defined as the willingness and readiness of companies to provide services in a dependable, standard, accurate and responsive manner, for instance construction firms to construct a standard road that would last for long period of time. Babatunde (2021) quality service is defined keeping in mind the following perspectives Excellence - Although the mark of an uncompromising investor and high achievement, the attributes of



standard may change dramatically and rapidly. Standard is often externally defined. Value- It incorporates multiple attributes, but quality and value are different constructs one the perception of meeting or exceeding expectations and the other stressing benefit to the recipient. Conformance to Specifications: It facilitates precise measurement, but users of a service may not know or care about internal specifications. Meeting and/or Exceeding Expectations: This definition is all-encompassing and applies across service industries, but expectations change and may be shaped by experiences with other service providers.

### ***Timeliness Contract Completion***

Timeliness contract completion refers to the time expectation for accessibility and availability of finish contract. Timeliness can be measured as the time between when project is expected and when it is readily available for use. The success of business applications relying on master data depends on consistent and timely information (Olowokure et al, 2015). **Timeliness** contract completion also means the schedule milestone when the work is completed in accordance with the terms of the contract documents and contractor has satisfied all of its other obligations under the Contract Documents, including but not limited to (1) all governmental authorities have given final, written approval of the Work, (2) a final unconditional certificate of occupancy has been granted and issued to the Owner by the appropriate governmental authorities, (3) the Contractor's Work is 100 percent complete, and (4) all Punch List items have been completed or corrected, and (5) the Contractor has complied with conditions precedent to final payment and release of retained funds.

Timeliness of project is one the most important aspects of contraction firms. Therefore, it is the duties of contract manager to plan and manage it contract effectively. Contract management is the process of actively managing contract implementation to ensure the efficient and effective delivery of the contracted outputs and/or outcomes. Effective contract management enables Borrowers to maximize value for money (VfM) in delivering development outcomes. The focus of contract management is on the activities that are undertaken during the contract execution/implementation phase, following the award of contract (downstream activities). However, the success of contract management is strongly influenced by upstream activities such as those undertaken during the procurement planning, choice of contract, and contractor selection phase (World Bank, 2018). To achieve good contract performance, contractor and contractee should ensure that the terms of the contract are adhered to and that both parties to the contract understand their respective obligations. Contract management also involves a level of flexibility by both parties and a willingness to adapt the contract terms to reflect any changing circumstances, as appropriate. Good contract completion is strengthened by systematic and efficient planning, execution, monitoring, and evaluation.

## **Theoretical Review**

A theory is described as a conceptual representation of the issues, events, or concepts that may be relevant in explaining observable correlations in a certain phenomenon or organization. A theory, according to Adeleke et al (2018), is an integrated body of definitions, assumptions, and general propositions that cover a specific subject and from which a comprehensive and consistent set of specific and tested principles may be drawn logically. According to Ali-Jabali (2013), a theory is a set of concepts, assumptions, rules, and standards that regulate a certain professional practice.

There are several theories that are utilized to explain the link between organizational design and effectiveness. Some of these theories are Job design, theory Structural Contingency, Theory System Theory, Weber's theory of bureaucracy, Classical theory, Behavioral theory and The Scientific Management theory. However, this study is anchored on job design theory by Hackman and Oldham (1980) and Structural Contingency Theory by Fred Edward Fiedler (1964). Others includes; Theory System Theory by Ludwig von Bertalanffy in (1940) and Weber's theory of bureaucracy by Max Weber's (1946).

### ***Job design theory***

Viteles was the initial proponent of job design theory in the early 1950s, and it was further developed by Hackman and Oldham (1980). Other ways for improving organizational effectiveness are included in the theory. Job rotation, job expansion, job enrichment, self-managing teams, sometimes known as autonomous workgroups, and high-performance work design are the main tactics. Job reengineering, participative management and performance evaluation are some other strategies (Halepota & Shah, 2011).

This theory utilizes both job rotation and job enlargement to deal with the issues bothering poor employee morale and performance because of the monotony and boredom from job specification (Nahrgang et al., 2011). Besides, job rotation and job enlargement were established such that it will be of Benefit to job specialization evolving from job engineering technique (Parkeretal, 2017).

Gupta (2019), organisational leaders and superiors should understand factors of job characteristics that will make their organization effective. In job design as evidence in the organizational design, the job characteristics and connection between a component of job and employee reactions to work is crucial to goal accomplishment of the construction firms management as well as job quality services delivery. It advances conditions that employee will likely perform very well on the job. According to Olusegun and Olusoji (2020), job design theory is of the view that two factors come into being in provoking employees' satisfaction and by extension the ultimate quality performance in the workplace. One of it is the fact that job design seeks to integrate means in which change to job characteristics, such as workload, autonomy, variety and workplace supervisory support which will lead to enhanced worker's satisfaction and hence improve effective organization (Vanden-Broeck et al., 2013). The second



aspect is the benefits of job design, which are improved job satisfaction, inner drive of the workforce and increased employees' skills and ability (Marinova et al., 2015). Indeed, job design is appropriate to explain organizational design and effective organization in the work setting, as it has a direct relationship with improved quality services delivery and job satisfaction.

Olusegun and Olusoji (2020) propose five dimensions of job design that impact on a effective organization to individual and job outcomes. It takes into consideration employee divergent views as moderating factor of association between job features and job outcome factors. Therefore, Olusegun and Olusoji (2020) establish the five job characteristics as follows:

1. **Task identity:** It describes the aspect in which job demands realising complete and identifying the part of the job task that will help in accomplishing the work from beginning to the end with a visible, marked and positive outcome. This also is said to motivate employee and gear them to be happy on the job.
2. **Skill variety:** This explains the extent to which a job demands various skills, ability and capacity from an individual employee in achieving a set task. This is said to drive effective organization when an organizational design has been structure base on skills to perform a certain task and opportunity for training where there is a deficiency of required skills.
3. **Job autonomy:** This describes the degree of independent judgement to make informed decision and discretion regarding the assigned task given to individual employees. In other words, the liberty to expand on the job and responsibilities is given to the employees to perform their duties and functions effectively. Autonomy in the workplace provides employees with a sense of job ownership and make them feel in charge of the work which largely steers up the satisfaction in an individual employee.
4. **Task significance:** This emphasizes the extent to which a job has a cogent influence on the well-being of other employees, or how it affects other employees, within and outside the firm. In other words, employees' understanding of several other individuals who depend on the work they are performing is a crucial point in their satisfaction.
5. **Job feedback:** It explains a process by which reporting managers, superiors and peers at work offer constructive suggestions to employees on the assigned task which allows improvement and possible enhanced productive work behaviour (Chen & Lu, 2012).

### ***Reason for underpinning the job design theory to this study***

The reason for underpinning job design theory for this study is that, the theory of job design which has direct bearing with organizational design dimension in-term of job specialization, centralization and decentralization, and also, to effective of organization measures such as quality service delivery and job satisfaction workplace productivity and work climate improvement. Job design theory describes the systematic and purposeful distribution of job task to the team, group and individuals in an organizational setting which form part of organizational design. The five components of job design are skill variety, task identity, task significance, job autonomy, and job feedback. All of these stimulate organizational design process and effective

organization. The theory involves a combination of job content and work method which has been embraced in effectiveness of organization.

### **Empirical Review**

Several studies carried out studies to investigate the relationship between organizational design and effective of organization. Their results differ from each other due to researcher's methods of data analysis, scope of the studies, method of data collection etc.

Grace et al (2021) investigated influence of organizational design on performance of Mobile Telephone Network Operators in Kenya. Primary data was gathered using self-guided semi-structured questionnaires and secondary data was obtained from published profit margins and percentages of market share obtained from the companies' reports. Study population was 6,167 which included all the employees in the Mobile Telephone Network Operators in Kenya and a total sample size of 361 employees was obtained but 258 questionnaires were filled and returned. Data analysis was done using descriptive statistics and inferential statistics. Sub-variables used for the independent variable were teamwork organizational structure, learning organization structure and boundary-less structure. Performance of Mobile Telephone Operators in Kenya was analyzed in terms of profit margins and market share. The findings revealed that organizational design does not positively influence performance of MTNOs in Kenya. Goodness of fit model demonstrated that organizational design had a positive influence on organizations' performance of MTNOs accounting for the performance. The study concluded that there was a statistically significant influence of organizational structure on organization's performance. The research gap of the work studied by Grace et al (2021) was investigated in Kenya, while this current study was conducted in South-South construction firm in Nigeria.

DedyNugroho and Ferdous (2021) conducted a study on the influence of organizational structure, work design and competency toward nurses' performance satisfaction of nurses in Jakarta seaport Hospital and Omni Hospital Pulomas. The study employed quantitative descriptive research. The target population was 200 nurses at the Jakarta Seaport Hospital and 200 nurses at the Omni Pulomas Jakarta Hospital. The sources of Data collection were primary and secondary sources obtained via structured questionnaire. The mean values, standard deviation, Pearson Correlation, MANOVA and ANOVA were used to analyze the data. The findings of the study revealed that organizational structure on the satisfaction of the performance of nurses at Omni Hospital Pulomas has a higher impact value than Jakarta Seaport Hospital, while Jakarta Seaport Hospital has a higher impact value for Work Design on Nurse's Performance Satisfaction than the Omni Hospital Pulomas in Jakarta, and for the Jakarta Seaport Hospital Competency Variable. Finally, Omni Hospital has the effect of competence on the performance satisfaction of nurses. Nurses need to further strengthen their performance and competence and pay more attention to patients' concerns. The literature gap, the work of DedyNugroho, and Ferdous (2021) was to investigate the influence of organizational structure, work design and competency toward nurses' performance satisfaction of nurses while the present study is to establish the relationship between organizational design and effectiveness of South-

South construction firm in Nigeria which content scope covered simple design, functional design, divisional design, team design, matrix design, network design and hierarchical layer, timeliness, government policies etc.

Nosike et al (2021) determined organizational design and employee performance of selected deposit money banks in Anambra state, Nigeria. Survey research design was employed for the study. The population of the study consists of five selected deposit money banks quoted on the Nigerian Stock Exchange using purposive sampling technique. Data collected for the study was analyzed using regression analysis with the aid of SPSS. The study revealed that nature of formalization and layers in the organizational hierarchy has significant effects on the employee's performance of commercial banks in Anambra state, Based on the findings, the study recommended the followings that bank managers should combine elements of both task routine and variety in organizing employees for carrying out task in order to reap the advantages of both systems of task assignment. The empirical gap of the study was that, Nosike et al (2021) studied on organizational design and employee performance in deposit money banks while the current study on organizational design and effective of South-South construction firms in Nigeria.

### **Gap in Literature**

From empirical findings, the researchers believed that there has not been any work done on functional design and effectiveness in construction companies in south-south region of Nigeria as most of the previous works were carried out outside Nigeria and those that were carried out in Nigeria lacked both content and geographic gap as the variables in the present study were systematically selected and were not in any way related to empirical studies by scholars. This study effectively fills both geographic and content gaps by focusing on construction companies in South–South region of Nigeria.

### **Methodology**

This study employed the cross-sectional survey research design method with the use of questionnaires to elicit response adequate enough to evaluate the relationship between functional design and effectiveness in construction companies in South-South Region of Nigeria. The survey research design was considered most appropriate for the study because of its strengths.

The population of this study is 195 employees of the 6 construction companies operating within the South-South region of Nigeria, comprising of Azikel Dredging Ltd, Setraco Nigeria Ltd, Bejaif Steel Construction Company, Denco Best Building Construction Company, Bejarack Construction Company Ltd and VKS Construction as obtained from the Finelib.com. The units of measurement for the study therefore comprised of a total of 195 staffs of the construction companies. The sample size of respondents is computed via Taro Yamen formula and the value is 131.

Structured questionnaire was used as instrument for the collection of primary data. The instrument was titled “Functional Design and Effectiveness of South-South Construction Firms in Nigeria (FDESSCFN). The instrument was constructed using a 4 point likert scale of Very

Great Extent (VGE) 4; Great Extent (GE) 3; Moderate Extent (ME) 2; and Low Extent (LE) 1. To ensure the validity of the instruments for this study, the content and face validity was adopted in ascertaining the extent to which the instrument can be said to be accurate and precise in the measurement of the variables under investigation. The Cronbach alpha was adopted in assessing the reliability of the study instrument, items with return alpha coefficients of 0.7 and above considered as being suitable and adequate for inclusion in the analysis, while items with return a Cronbach alpha less than 0.7 was be considered as unsuitable and unqualified for inclusion in the analysis (Nunally, 2008).

The research questions were answered with Spearman rank correlation statistic so as to establish the relationship between the dependent and independent variables in the study. The basis for the decision for the research questions' conclusion was as follows: 0.00 – 0.20 = very low relationship, 0.21 – 0.40 = low relationship, 0.41 – 0.60 = moderate relationship, 0.61 – 0.80 = high relationship and 0.81 – 1.00 = very high relationship. The hypotheses were tested with Theil-Sen regression technique so as to measure the “significance” of the degree of relationships existing between the dependent and independent variables. This implied that it helped to ascertain if the coefficient of the relationship is significant or not. Both techniques employed are nonparametric statistics, which was used because the error term assumption for normality was not fulfilled. The acceptance or rejection of null hypothesis was based on whether the calculated p-value is less than the level of significance (0.05). Alternatively, the null hypothesis was rejected if the calculated value (F) is greater than the tabulated value (F), otherwise the null hypothesis is accepted.

## Result

### Tests for Normality Assumption for the Bivariate Regression Model

This assumption requires that the residuals from the model should be normally distributed. When residuals are normally distributed, we can test a specific hypothesis about a bivariate regression model. Hence, it becomes statistically important to first examine the normality assumption before proceeding to the hypotheses. However, it should be noted that when the assumption fails, using the regression model directly leads to error in the interpretation of result. Here we tested the normality assumption based on using each of the dependent variables with each of the independent variables via the Jarq-Bera Statistic.

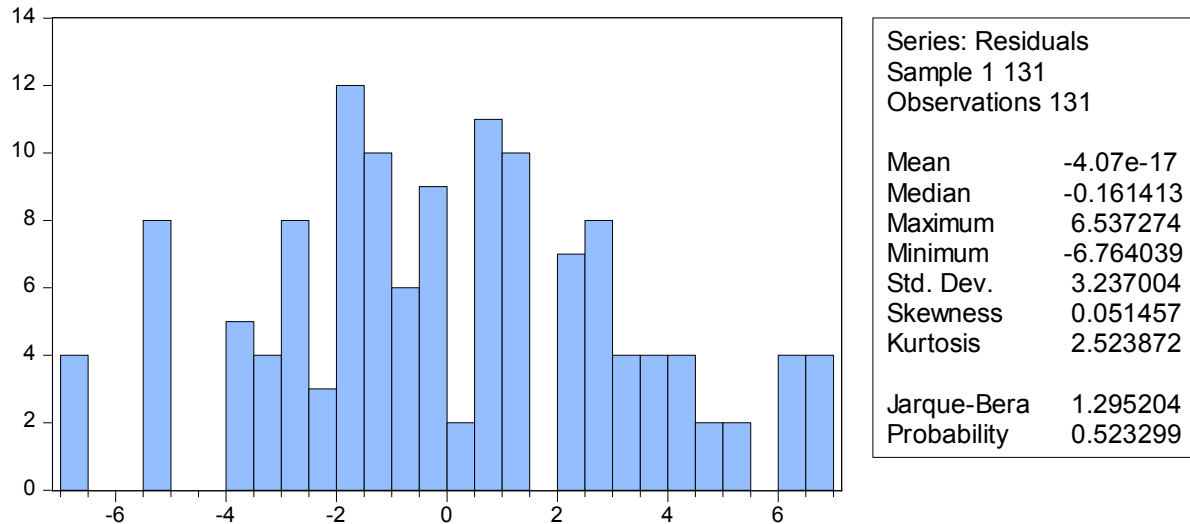
### Normality of Errors Assumption – Quality Service (QS) versus Functional Design (FD)

To test for normally distributed errors, we employed the Jarque-Bera test for normality. The hypotheses of the Jarque-Bera test are as follows:

$H_0$ : Errors are normally distributed

$H_1$ : Errors are not normally distributed

**Fig. 2: Normal Probability Plot of Residual for Quality Service & Functional Design**



Source: Eviews software

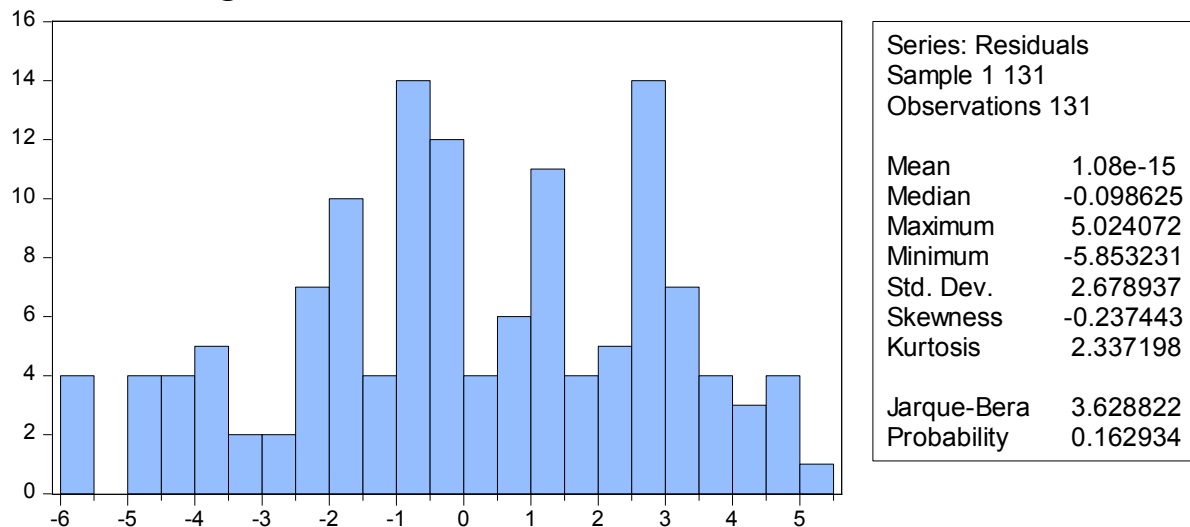
Since the p-value (0.523) is greater than 0.05 from Fig. 2, the null hypothesis is not rejected. This implies that the assumption of normality distributed errors is satisfied.

**Normality Assumption–Timeliness Contract Completion (TCC) versus Functional Design (FD)**

To test for normal distributed errors, we employed the Jarque-Bera test for normality. The hypotheses of the Jarque-Bera test are as follows:

- H<sub>0</sub>: Errors are normally distributed
- H<sub>1</sub>: Errors are not normally distribute

**Fig. 3: Normal Probability Plot of Residual for Timeliness Contract Completion & Functional Design**



**Source: Eviews software**

Since the p-value (0.163) is greater than 0.05 from Fig. 3, the null hypothesis is not rejected. This implies that the assumption of normality distributed errors is satisfied.

**Analysis and Results of Research Questions**

**Research Questions/Hypotheses One to Two**

In this section, the Spearman rank correlation coefficient and the Theil regression techniques were employed to address research questions and hypotheses respectively since the normality assumption of the error term was not all satisfied.

**Research Question One**

What is the relationship between functional design and quality service?

**Table 1: Spearman’s Rank Correlation Summary for Quality Service and Functional Design**

Variables	n	$\Sigma$	$\bar{X}$	SD	r
Quality Service	131	1268	9.679	4.052	<b>0.584</b>
Functional Design	131	1216	9.282	3.178	

**Moderate Relationship**

**Source:** Extracted from SPSS Output

Table 1 shows the result obtained in respect of research question one. The result reveals that the Spearman rank correlation coefficient is 0.584, which is moderate. This implies that there is a moderate relationship between functional design and quality service.

**Testing of Hypothesis One**

**H<sub>01</sub>:** There is no significant relationship between functional design and quality service.

**Table 2: ANOVA Summary for Theil-Sen Regression of Functional Design and Quality Service**

Response: Quality Service	Df	Sum of Squares	Mean Squares	F-value	p-value
Functional Design	1	738.31	738.31	66.603	0.000
Residuals	129	1430.00	11.09		

**Source:** Extracted from R-Studio Output

The result in Table 2 shows that the mean squares of 738.31 for functional design and 11.09 for residuals, F-calculation value of 66.603 and a p-value of 0.000 which is less than 0.05.



This indicates statistically significant result. Therefore, the null hypothesis which stated that there is no significant relationship between functional design and quality service is rejected. Hence, the study concludes that there is significant relationship between functional design and quality service.

**Research Question Two**

What is the relationship between functional design and timeliness contract completion?

**Table 3: Spearman’s Rank Correlation Summary for Timeliness Contract Completion and Functional Design**

Variables	N	$\Sigma$	$\bar{X}$	SD	r
Timeliness Contract Completion	131	1985	15.153	3.336	<b>0.585</b>
Functional Design	131	1216	9.282	3.178	

**Moderate Relationship**

**Source:** Extracted from SPSS Output

Table 3 shows the result obtained in respect of research question two. The result reveals that the Spearman rank correlation coefficient is 0.585, which is moderate. This implies that there is a moderate relationship between functional design and timeliness contract completion.

**Testing of Hypothesis Two**

**Ho<sub>2</sub>:** There is no significant relationship between functional design and timeliness contract completion

**Table 4: ANOVA Summary for Theil-Sen Regression of Functional Design and Timeliness Contract Completion**

Response: Timeliness Contract Completion	Df	Sum of Squares	Mean Squares	F-value	p-value
Functional Design	1	547.47	547.47	75.036	0.000
Residuals	129	941.19	7.30		

**Source:** Extracted from R-Studio Output

The result in Table 4 shows that the mean squares of 547.47 for functional design and 7.30 for residuals, F-calculation value of 75.036 and a p-value of 0.000 which is less than 0.05. This indicates statistically significant result. Therefore, the null hypothesis which stated that there is no significant relationship between functional design and timeliness contract completion is rejected. Hence, the study concludes that there is significant relationship between functional design and timeliness contract completion.

## Discussion of Findings

1. The study has examined the relationship between organizational design and effectiveness in construction companies in south-south region. In the study, it was showed that there is a moderate significant relationship between functional design and quality service. This signifies that when organizational design is structured in terms of function, it can enhance the service quality of organizations. Grace et al (2021) investigated influence of organizational design on performance of Mobile Telephone Network Operators in Kenya. The study concluded that there was a statistically significant influence of organizational structure on organization`s performance.
2. Functional design enhances timeliness contract completion as the study has showed. This is in line with the empirical work of Nosike et al (2021) using deposit money banks in Anambra state that showed that organizational design relates to employee performance as it enhances their timeliness in the completion of employee given duties in the deposit money banks.

## Summary of the Findings

Data set collected for this study was subjected to normality assumption using Jarque-Bera statistic. The test was done for all the twelve bivariate variables relationships between functional design, and effectiveness (quality service, timeliness contract completion), and the results revealed that their error terms were not all normally distributed. Hence, it resulted to employing non-parametric equivalents of using Theil-Sen regression to achieve the hypotheses, while Spearman rank correlation coefficient was used to achieve the research questions.

Employing the non-parametric techniques (Theil-Sen regression and Spearman rank correlation), and using the data collected for this study for the research questions and the test of hypotheses, the following findings were deduced from the study;

1. There is a moderate significant relationship between functional design and quality service.
2. There is a moderate significant relationship between functional design and timeliness contract completion.

## Conclusion

The study concludes that functional design positively and significantly improved the effectiveness of construction companies in south-south region of Nigeria. Each of variable functional design greatly improved effectiveness indicators like quality service, and timeliness contract completion in south-south region of Nigeria.

Therefore, the researchers submit that functional design that is considerably considered improves the effectiveness of construction firms as it stimulates quality service, and timeliness of such firms. This would boost the overall organizational performance.

### Recommendations

In alignment with the findings made in the study, the researchers recommend thus:

1. Functional design brings efficiency into the operations of the business, this is because when employees are allowed to focus on one specific functional area to the exclusion of all else, they can achieve significant efficiencies in terms of process flow, management methods and service quality.
2. Management of construction firms should ensure that functional design is used as one of their organizational design tool as it enhances timeliness of contract completion

### Contribution to Knowledge

This present study contributes to knowledge in the area of functional design and effectiveness of construction companies in south-south region of Nigeria. Based on the research gaps identified in this study, this present study contributes to knowledge by bridging those research gaps. It provides empirical literature on the relationship between functional design and service quality in construction companies; and functional design and timeliness contract completion in construction companies.

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