Prism Methodology and Economic Sustainability of Selected Construction Firms in Lagos State

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ABSTRACT

The study was conducted to assess the impact of prism project management methodology on economy sustainability of construction firms in Lagos state. Survey research design was adopted for this study with the aids of structured questionnaire. Data were collected from a proportional stratified sample of 57 construction firms and 246 clients of those firms respectively. These firms were registered with Lagos Chamber of Commerce. The data collected instrument was validated using both content and construct validity, while the reliability of the instrument was determined using Cronbach Alpha which was achieved at $\alpha = 0.8$. Multiple Regression analysis was used for the data analysis. The findings revealed that, there was a significant relationship ($R^2 = 0.580$; $p<0.05$) between commitment and accountability, ethics and decision-making power and integration and transparency and economic sustainability of construction firms. From the findings of the study, it was also discovered that prism project methodology could help to overcome budget, time, stakeholder and contracting challenges that could allow construction firms to suffer and record significant economic losses. The study recommended among others that construction firms should align PRISM methodology to core strategy of their firms in order to enhance their economy sustainability. The study has been able to establish the significant relationship between prism methodology and economic sustainability of construction firms in Lagos State and further show the extent of contribution of the independent variable to the dependent variable

Keywords: Prism methodology, Commitment and Accountability, Ethics and Decision-Making Power and Integration and Transparency and Economy sustainability

INTRODUCTION

Project management as emphasized by the accomplishments of the project builders, architecture of ancient cities, including the works of masons and artisans and skilled workers on the great wall of China and other marvels, was described to be one of humanity's oldest and most respected achievement of mankind. Following the Second World War, the complexity of projects and declining labor supply due to the war necessitated new approaches. This prompted the introduction of Program Evaluation and Review Technique (PERT) charts, and Critical Path Method (CPM) provided project managers with control over large-scale and highly complex projects. Project management has been developed for the past couple of decades as researchers and practitioners have attempted to trap the essence of project failure and various criteria that could enhance project success (Hammed & Bakare, 2022)

In other to enhance the functionality of industries to improve both its understanding and application of human factors the European Process Safety Centre took the initiative in creating PRISM. PRISM was a 'Thematic Network' aimed at creating an extensive forum across different institutions such as universities, research centers, construction firms and other practitioners to collaborate and improve the flow of practical experience and fundamental knowledge (Robin & Lee, 2004).

PRiSM Framework "Projects integrating Sustainable Methods" is an organized approach to sustainable "Green" Project Management. It is grounded in various standards, including ISO 21500:2012"Guidance on Project Management". Knowledge and practical application of the PRiSM Framework. (Triantafyllos &Iliana, 2015)

Project management in construction firm involves organizing projects activities to effectively achieve in such manner that promotes adequate realization of the project goal. Despite the efforts of project managers and team members to complete projects on time, within budget, and meeting all requirements with high quality, challenges persist. Recently, various trends in project management have emerged to improve project performance and sustainability. For the purpose of this paper, the focus will be on how a new sustainability project management methodology called PRiSM can help construction projects, its challenges and constraints to promotes economic sustainability of the construction firms (Monica,2014)

The consequence of changes in the internal and external conditions of the function of construction firms are dynamic due to the existing management concepts and new management problems. Factors driving changes within organization can be attributed to the ongoing continuous improvement of management models and organizational structures, such as through process automation. Changes in the external environment of the organization are more noticeable and result primarily from the development of technology, digitization, and their effects are also felt in the social, economic, and environmental spheres (Triantafyllos &Iliana, 2015).

Specifically, Amalraj, Hernani, Ladouceur, & Verma stated (2022) stated that over-budgeted projects, sometimes started with misinformation and inadequate data to get the final approval, causing difficulties in subsequent stages. Furthermore, another major challenge for keeping the project on budget could also result from lack of competitive contractors and the scarce labor resources. Scheduling can significantly affect project management success, particularly when there is a shortage of skilled contractor staff and an adequate number of team members to support planners and schedulers in large projects.

According to Jarosz et al. (2020) explained that the changes connected with industry digitization, automation, robotization, data processing, and intelligent systems are major challenges of economic sustainability of construction firms. On the other hand, Coşkun et al. (2019) stated that specific technologies such as Internet of Things, Internet of Services, or Industrial Internet are the major constraints for sustainability of the construction firms.

However, despite these authors' contributions, many of these challenges remain. This highlight the need for a study on Prism methodology and Economy sustainability of construction firms in Lagos State

LITERATURE REVIEW

Preamble

PRiSM is a sustainability project management methodology that incorporates five elements to offer a comprehensive view of project management. The study of Joel Carboni, President and Founder of Green Project Management (GPM Global), explains that PRiSM concepts and guidelines, emerged from concerns about processes. The study highlighted that some green did not fully address environmentally responsibility, focusing only on the final product rather than the entire delivery process. PRiSM (Projects integrating Sustainable Methods) is a standardized approach that merged sustainable development principles with widely accepted project management practices. It provides tools and procedures to support management and achieve business objectives, effectively addressing environmental, social, and economic impact at the project level. PRiSM can be applied across various sectors and organization. (Triantafyllos & Iliana, 2015)

Traditional sustainability project management typically centers on the triple bottom line elements (environment, community, finance) for project development. However, members of Green Project Management (GPM) believes that additional elements are necessary to align project with the core orporate strategy. For that reason, they developed PRiSM methodology including five elements (People, Planet, Profit, Product, and Process) as a new bottom line. (Monica, 2014)

Prism Performance Model

Performance Prism is a performance measurements framework with five facets that create a three-dimensional triangular prism. The top and bottom facets represent stakeholder satisfaction and stakeholder contribution, while

the other three facets are strategies, processes, and capabilities. Numerous models and concepts developed by experts, such as SMART, performance measurements questionnaire, quantum measurement models, The Balanced Scorecard, Malcolm Baldrige Criteria, and Performance Prism are used by companies for performance measurement. Among these, the Balanced Scorecard is the most frequently utilized overall model for performance measurement. Balanced scoreboard is a framework use to measure the performance of firms viewed from causal relationships between strategic goals (Kaplan and Norton, 1996) using four perspectives: financial perspective, customer, internal business process, and learning and growth (Neely et al., 2002).

The performance Prism model builds on the Balanced Scorecard model. It incorporates five perspectives: Stakeholder satisfaction, Stakeholder contribution, Strategies, Processes, and Capabilities These perspectives form a triangular prism, with Stakeholder satisfaction and Stakeholder contribution on the top and bottom, and strategies, processes, and capabilities along the upright sides. Performance Prism provides comprehensive and comprehensive measurement by identifying stakeholders from the investors, customers, suppliers, employees, governments, and communities around the company environment. (Desmon, Sukaria, Iskandarini & Katrin, 2019)

Principles of PRiSM Methodology

The effectiveness of the PRiSM methodology is attributed to its integration across various departments within the organization. For successful adoption at all levels, it is important to grasp its foundational principles before implementing them throughout the company, these principles include; commitment and accountability**,** this entails ensuring safe, healthy, and clean environment, fair wages, ethical procurement, and adherence to legal standards**:** ethics and decision-making Power , this involves identifying, mitigation, and preventing harmful effects on society and the environment, both in the short and long term: integration and transparency**,** this principle focuses on balancing social integrity, environmental impact, and economic development in all aspect of monitoring, management, and practice.**:** development of resources implies maintaining and improving the natural resource base by enhancing the development and utilization of technology and resources**:** social and ecological Equity means evaluating human vulnerability based on demographic changes in ecologically sensitive regions and population centers.: economic prosperity, this is the establishment of fiscal targets and strategies that balance the needs of the stakeholders, both present and future. (Xebrio, 2024).

Sustainability of Organizations and Projects

The topics of Social and Environmental Responsibility and Corporate Development are integral to the holistic approach of sustainable development and represent a leading area of both theoretical and applied research. Traditionally, private sector organizations have either expanded or merely" survived" by prioritizing financial gains and sharing profits to their partners or shareholders. However, structure of every type, orientation, size and proprietorship must secure and sustain societal approval or at least tolerance to continue their operation. Sustainability involves a dedication to the "Triple Bottom Line" Profit – People – Planet, as illustrated in Figure 1. below. The Individual features of Sustainability include: Balancing short and long-term objectives at a local and global level, consuming “income" and not "capital" (whether economic, social or environmental), transparency and accountability, operating according to collective and individual values and principles. (Triantafyllos &Iliana, 2015)

Figure 1: The Triple Bottom Line

Source (Triantafyllos &Iliana, 2015)

Theory of Project Management from the Industrial Era to the Knowledge Society

Project management is not just a great business for software firms and publishers. Also, it is for consulting, thriving considering the widely extended the view that projectized organization and teamwork is seen as the key to the future of an organizational. It is an idea that determines future success of an organization to most of its advocates. A well-known one of the early researchers in the field of project management is Alvin Toffler authored the influential book "The Third Wave" in 1980 (as cited in Ern-Kjolhede, 1999), suggested in his book that post industrialism (third wave) will require new ways of flexibility, adaptively of organization to drastic changes in the work place. The practical consequence of this is that the individual ability and interpersonal skills of employees will be more in focus. This assertion was also emphasized in some books on knowledge management, which dwells more on empowering individual interpersonal skills and flexibility. This corroborates with the observations on the essentials of research management, this assertion promotes projectized organization, where project manager capability and skills could be effectively utilized due to authority at his disposal compared to traditional approach. This gives an organization the opportunity to adapt easily to variation. (Erno-Kjolhede, 1999).

RESEARCH METHODOLOGY

This research used a survey method with a structured questionnaire. Population of this comprise of 76 construction firms registered with Lagos chamber of commerce. To determine the sample size, the Krejci and Morgan formula was utilized, resulting in sample of 57 construction firms. The instrument used for data collection was validated for content and construct validity, while its reliability was measured with Cronbach's Alpha, which achieved a value of $\alpha = 0.8$. Data analysis was conducted using multiple regression analysis.

Research Findings

Data Analysis

Based on the research methodology discussed above. Fifty-six (57) copies of the questionnaires were distributed to Project managers f of each participating building firms accredited by the Lagos Chamber of Commerce and Industry (LCCI). Of the 57 questionnaires distributed, forty-six (46) usable were received return from the construction firms. This represents 91% response rate. Multiple regression analysis was used to analyses the data collected from both project managers of the construction.

Analysis of Hypothesis

Accountability and Commitment, Ethics and Decision-Making Power and Integration and Transparency does not have any significant contribution to economic sustainability of construction firms.

Table 1 Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.864[a]	.746	.643		.12594

a. Predictors: (Constant), Commitment and Accountability, Ethics and Decision-Making Power and Integration and Transparency

Table 2: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	.018	3	.006	.386	.036[b]
Residual	.666	42	.016		
Total	.685	45			

a. Dependent Variable: Economy sustainability

b. Predictors: (Constant), Commitment and Accountability, Ethics and Decision-Making Power and Integration and transparency

Table 3: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	4.692	.377		12.450	.000
Commitment and Accountability	.009	.072	.022	.120	.005
Ethics and Decision-Making Power	.074	.085	.160	.877	.035
Integration and Transparency	.016	.069	.039	.233	.017

a. Dependent Variable: Economy sustainability

Tables 1, 2 and 3 provide the overview of the model, variance analysis, and coefficient of determination of the findings, respectively. The model summary table (Table 1) indicates that Accountability and Commitment, Ethics and Decision-Making Power and Integration and Transparency have strong positive correlations with economic sustainability (R = 0.864). This suggest that a holistic approach to Commitment and Accountability, Ethics and Decision-Making Power and Integration and Transparency more likely to lead to economic sustainability The model further shows the extent to which Accountability and Commitment, Ethics and Decision-Making Power and Integration and Transparency account for variation in economic sustainability of construction firms. The multiple correlation coefficient (R^2 = 0.746) shows that 74.6% of the change in economy sustainability is accounted for by Accountability and Commitment, Ethics and Decision-Making Power and Integration and Transparency.

Table 3 shows how will the regression model estimate the dependent variable, based on the model's statistical significance. The *p*-value (0.036) indicates that the regression model has significant predictive power of the outcome variable, (i.e., it fits the data well). An assessment of the unstandardized coefficients of Accountability and Commitment, Ethics and Decision-Making Power and Integration and Transparency in the table coefficients (Table 3) the linked p-values indicate Accountability and Commitment, (β_{TC} = 4.692, $p < 0.05$), Ethics and Decision-Making Power ($\beta CC = 4.692$, $p < 0.05$), and Integration and Transparency ($\beta RC = 4.692$, $p < 0.05$) are statistically meaningful and suitable for enhancing economy sustainability.

Regression Model: Economy sustainability = 4.692 + 0.009C+ 0.074E+ 0.16I

DISCUSSION OF FINDINGS

The findings showed that there is a significant relationship (R^2 = 0.580; $p<0.05$) between Accountability and Commitment, Ethics and Decision-Making Power and Integration and Transparency and economy sustainability of construction firms. From the findings of the study, it was discovered that prism project methodology could assist in addressing budget, time, stakeholder and contracting challenges that otherwise lead to substantial economic losses for construction firms. The study recommended among others that construction firms should align PRISM methodology to core strategy of their firms in order to enhance their economy sustainability.

CONCLUSION

The study concludes that current state of construction project management requires significant improvement and should be addressed with more effective concepts and management methods. The primary challenges faced by the industry stem from its inherent characteristics, as well as internal issues such as inadequate management, insufficient technology advancement, and limited utilization, PRiSM methodology could deliver the construction project with minimal scope changes and provide a schedule, cost efficiency, and specification. Furthermore, it shows a link between project success and PRiSMmethodology. Incorporation of PRiSM methodology features enhance project management methods and address cost budget, schedule, stakeholder, and contracting challengers which currently lead to significant economic losses for construction companies. The PRiSM methodology support contribution of projects by aligning its objectives with the company's central strategy improving the logistics network, and broadening its mission.

RECOMMENDATION

The study recommended among that construction firms should align PRISM methodology to core strategy of their firms in order to enhance their economy sustainability.

Contribution to Knowledge

The study has been able to establish the significant relationship between prism methodology and economic sustainability of construction firms in Lagos State and further show the extent of contribution of the independent variable to the the dependent variable.

This study could enable construction firms identify the likely constraints to be encountered during the life cycle of the project and provides a means of mitigating the constraints that are capable of delaying the project beyond the expected time of delivery or leading to the abandonment of the project itself.

Conflict Of Interest

There is no any conflict of interest among Authors

Ethical Consideration

A thorough ethical approach to data collection was employed. The researcher obtained permission from the relevant authorities in each of the construction firms through a designated contact person before initiating the field work. The respondents were provided with detailed information about the research purpose and benefits and their informed consent was obtained. It was explicitly stated that their participating in the survey would not cause any harm, discomfort or privacy invasion and their data would bd used confidentially.

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