ASSESSING THE INFLUENCE OF PROJECT LEADERSHIP ON CONSTRUCTION PROJECT COST PERFORMANCE.

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Abstract

Effective leadership is crucial for longstanding project success. For that reason, the success of a project is hinged on leadership as it deals with the motivation of people as its principal objective. Thus, influencing others to understand what needs to be done and how it can be done is what project leadership is all about. However, The Nigerian construction industry is faced with a lot of challenges which makes it difficult to achieve projects cost performance successfully due to the lack of purposeful leadership and the unfitting choice of leadership style. This paper aimed at assessing the influence of the leadership styles on project cost performance in the construction industry in Nigeria with the objectives of identifying the leadership styles that influence project cost performance and establishing the influence of these leadership styles on each aspect of project cost performance. A quantitative research approach using a questionnaire survey was adopted. The target population of this study are registered construction professionals. They are: Architect, quantity surveyors, civil engineers and builders. 88 questionnaires that were completed and returned being 73.33% of the total sample size were analysedusing Partial Least Squares Structural Equation Modelling (PLS-SEM). It was established that in order to improve project cost performance in the light of constructing buildings with low maintenance cost and, constructing building at the cheapest cost, a combination delegating and directing leadership styles should be employed. Therefore, it is recommended that, to achieve a building with low maintenance cost and to have a building constructed at the cheapest cost both delegating and directing leadership styles should be used by the construction professionals. While, constructing building as estimated seems far-fetched, it is important to note that achieving a successful project cost performance in the construction industry in Nigeria entails the utilisation of both delegating and directing leadership styles by the construction professionals.

Keywords: *Cost Performance, Construction Industry, Leadership, Project Leadership, and Leadership Styles.*

Background

Projects are the engines of change and, the intent of change might emanate from a perceived shortage of funds, need to improve efficiency, changing patterns of demand, social pressures, technological advances, competition and alternative suppliers of goods or services. Those with management responsibility have to respond to these changes: Those who do it successfully prosper; those who do not, decline. This applies equally in the public and voluntary sectors and in the private and business sectors (BSI, 2010). The Project Management Institute (2017), defined a project as a short-term endeavour embarked on to create an exclusive product, service or

result. In agreement, Wren (2018) and Lester (2007), opined that a project is a unique set of co-ordinated activities, with aclear-cut starting and finishing points, carried out by an individual or organisation to achieve specific objectives within stipulated schedule, cost and performance parameters.

For a project to start off right, the project manager must become a leader and the leadership styles exhibited by this leader need to change at different phases of the project life cycle (Wideman, 2019). The success of a project is hinged on leadership due to the fact that leadership deals with the motivation of people as its principal objective (Wideman, 2019).In this light, it is noteworthy that project leadership is the process of influencing others to understand what needs to be done and how it can be done, coordinating and motivating the work of various individuals and subcontractors, and delivering a successful product in the context of a project (Morris and Pinto2007). BERR (2008), as cited in Suresh, Roden and Al-Khafaji (2009), echoed that, effective leadership is vital for long-term business success.

The construction industry is consistently marked for its poor performance and ineffective delivery of its desired goals. In many cases this is ascribed to the multifaceted and unique nature of its projects (Haponava and Al- Jibouri, 2010). These projects are dynamic, repetitious and involve continuous change all through their development and execution. In such environment, controlling project performance is therefore essential. For project control to be effective, the project goals have to be clearly defined (Haponava and Al- Jibouri, 2010). Also, executing construction projects within the budget and on time largely depends on procedures which requires sound judgement (Bezarede, 2017).

Problem Statement

Like any other construction project, the projects in the Nigerian construction industry are faced with a lot challenges out of which is cost overrun which counts on the issues of project cost performance. Ogunsanya, Aigbavboa and Thwala (2016) identified some of these challenges as: too many variations, technical incompetence, lateness in honouring payment certificates, design deficiencies, delays and lots more. Moreover, delay in construction project delivery in a major issue in the industry as well as cost overrun and declining level of client's satisfaction (Oladinrin, Olatunji and Hamza, 2013). These makes it difficult to execute projects just as estimated, be able to construct building at the cheapest cost and construct buildings while achieving lowest maintenance cost due to lack of purposeful leadership and unfitting choice of leadership styles Buba and Tanko (2017). These challenges suggest the existence of poor project cost performance in the Nigerian construction industry. And so, Larsson, et. al. (2015), established that project performance is influenced by leadership and the project manager's leadership style is a major project success factor. Likewise, recommended that certain leadership styles are more appropriate in different situations.

Aim and Objectives

This paper aims at assessing the influence of project leaders' leadership styles on project cost performance in the Nigerian construction industry. In order to achieve this, the following objectives were pursued:

1- To identify the leadership styles that influence project cost performance.
2- To establish the influence of these leadership styles on each aspect of project cost performance.

Basis of Study

The need to improve project delivery as regard the performance of the project cost

by the use of the project leader's leadership style hereby, forms the rationale for this paper. This was supported by Buba and Tanko (2017) that lack of purposeful leadership and unfitting choice of leadership styles in the industry have been attributed to project failure. Accordingly, this will help bridge the gap between project leadership and project cost performance.

Literature Review

The project leaders regularly take someone else's dream and execute it.It is important that they are competent to understand the basic idea that is to be developed. In some cases, project leaders birth the idea then sell to the funding sources. The methods of project leadership do involve technical expertise that the leader take's along to the project by way of personal knowledge and skill or by engaging suitable team members having the rightexpertise. For example, having some number of subcontractors work on huge projects, this necessitate the organising and scheduling of work to be carryout by the various team members however, providing a motivating work environment by the leader (Morris and Pinto, 2007).Leadership encompasses influence. It is focused on how the leader affects followers. Influence is the requirement of leadership. Short of influence, leadership does not exist (Northouse, 2016). For that reason, some researchers conceptualize leadership as a trait or behaviour, while, others view leadership from an information processing perspective relational standpoint (Northouse, 2016). Morris and Pinto (2007), made it clear that most leadership theories falls into any of these categories: contingency or universal. These are explained below:

Contingency theory

Contingency leadership theories suggest that different times, tasks, and organizations may require different types of leaders or leadership behaviour. These models imply that leaders can and do change their behaviour as the needs change. In respect to this Suresh, Roden and Al-Khafaji (2009), contributed that the very concept of leadership is vague for the construction industry. As leadership skills are so vastly different from the traditional technical skills required by construction professionals hence, they are often over looked or difficult to promote. In that sense Suresh, Roden and Al-Khafaji (2009), also added that the construction industry is unique with many exclusive departments and professionals to organize and, has particularly too rigid time and budgetary constraints.

Universal theories

Morris and Pinto (2007), opined that universal theories suggest that an effective leader is an effective leader regardless of the situation. He further added that these theories describe traits and behaviours that should work with any organization.

This paper is underpinned by the situational leadership model of the contingency theory. The situational leadership model suggests that leaders need to use more relationship-oriented behaviour in some situations and more task-oriented behaviour in others. Specifically, they tell leaders that when a team member is capable, but lacks motivation, a participative style is best. When a team member is capable and motivated, it is best to delegate authority. When a team member is inexperienced but motivated, the leader should provide guidance, explain decisions, and clarify procedures. When the team member is inexperienced and lacks motivation, the leader should dictate tasks and closely

monitor the work. This theory focuses on the follower's level of maturity and how leaders should interact with them (Hersey, Blanchard and Johnson, 2012). Figure 1 is pictorial explanation of the situational leadership model of the contingency leadership theory.

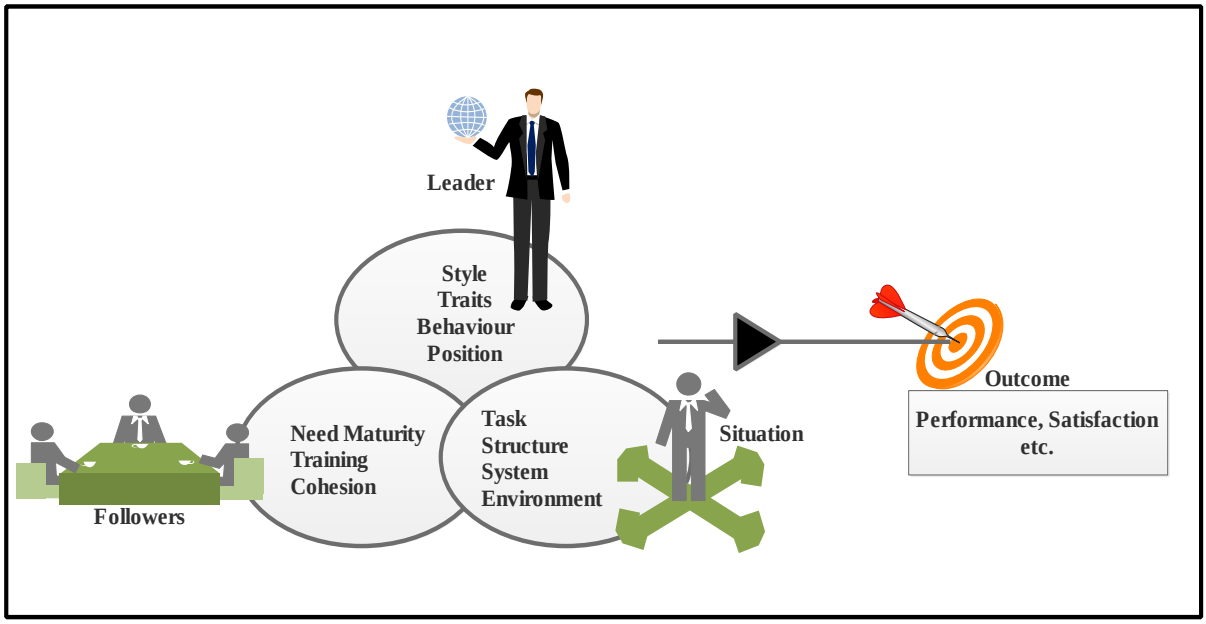

Figure 1. Contingency Approach to Leadership. Adapted from Daft (2008).

Daft (2008), explained Figure 1 stating that the failure to find universal leader traits or behaviours that would always determine effective leadership lead researchers in a new direction. Although leader behaviour was still examined, the central focus of the new research was the situation in which leadership occurred. The basic tenet of this focus was that a behaviour effective in some circumstances might be ineffective under different conditions. Thus, the effectiveness of a leader's behaviour is contingent upon organisational situations. Suitably called contingency (a theory meaning one thing depends on other things) approaches; these theories explain the relationship between leadership styles and effectiveness in specific situations. "what does a leader do?" that is, how does the leader behaves in different situation? The answer to these questions leads us to the behaviour theory of leadership. Bratton, Grint, and Nelson (2004), opined that, theorists who adopt the behaviour perspective on leadership attempt to answer the question, "What behaviour makes a leader more effective?" These theorists observe what individual leaders do and, in particular how they behave towards subordinates.

Leadership Styles

Leadership styles consist of the behaviour pattern of the leader who attempts to influence others. Hersey, Blanchard and Johnson (2012),explained the need for adaptive management styles in their theory of 'Situational Leadership'. The model it is grounded on the belief that people are more or less able and more or less willing to do certain tasks. Depending on the situation, the leader would then be required to do one of the following: (1) Direct, (2) Coach, (3) Support, (4) Delegate.

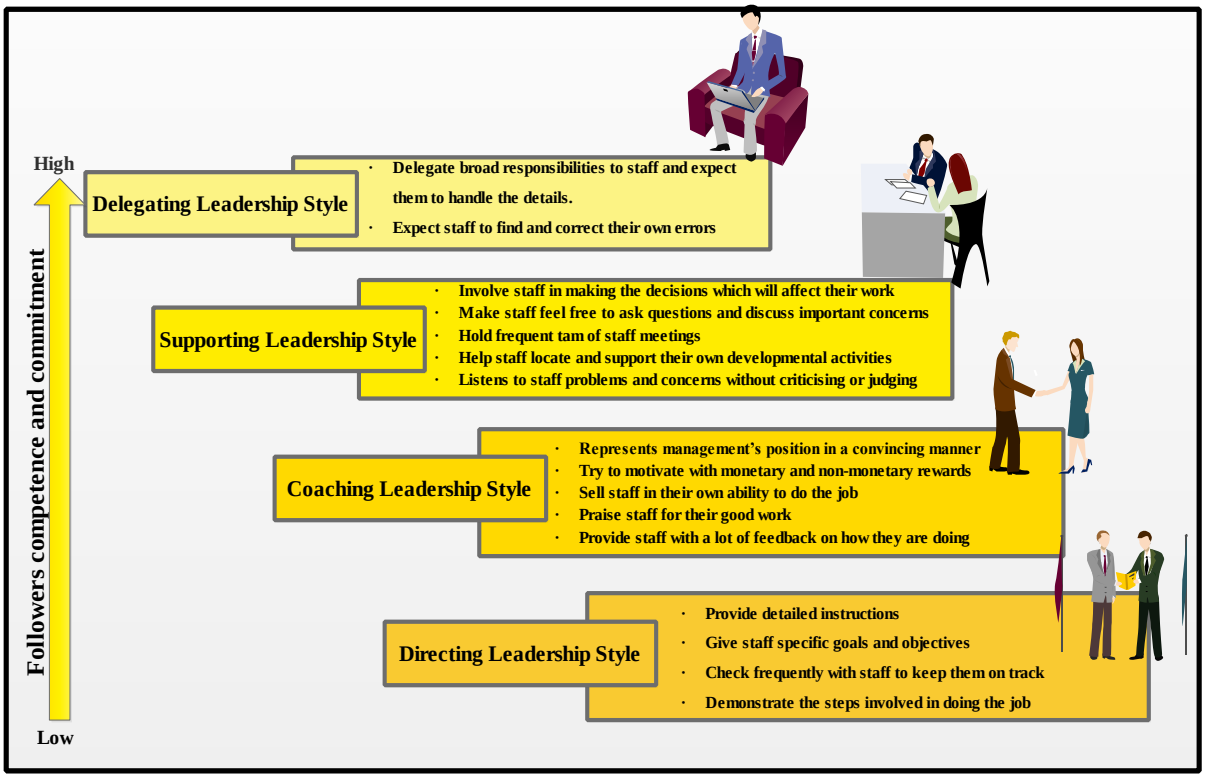

Figure 2. Leadership Styles (Author, 2019)

Directing, according to this model, would be appropriate for people who have limited skills and need to be told specifically what to do. Constant feedback is required to allow such people to gauge their progress. Coaching is needed when a person has certain skills, is keen to train and can progress on certain tasks without supervision. Once they have reached a certain level, they need new challenges to get their teeth into. Supporting is for people who have some idea of what they want to do but may need help with the process. They are not as competent as they may think just yet, so they will need guidance. Lastly, Delegating is for people who have reached a level of competence in their skills and have a clear idea of what they want to achieve. They want to retain contact for occasional feedback, but see themselves as partners rather than subordinates. Hence, Situational leadership allows for the development of individuals along a path from high dependence, through interdependence to independence (Marshall, 2014) just as shown in Figure 2.Situational Leadership isnot something you do to people, but something you do with People.

Methodology

The research approach employed in this paper is the quantitative research approach. This is because the quantitative approach addresses questions that hypothesises relationships among variables relating to natural phenomena by utilising mathematical models hypotheses and theories (Fellow and Liu, 2008). Also, Quantitative data are not abstract, they are hard and reliable; they are measurements of tangible, countable and,perceived features of the world (Naoum, 2019).

Research Instrument

A questionnaire survey was employed because that questionnaire is an

effective means of measuring behaviours, attitudes, preferences, opinions and intentions of relatively large numbers of subjects more cheaply and quickly than other methods (McLeod, 2018). The target population of this study are: architect, quantity surveyors, civil engineers and builders that are registered with their respective professional bodies. Their choice is based on the vital role they play as project leaders in the Nigerian construction industry. A simple random sampling procedure was adopted in this research as it gives an equal chance of selecting each professional field within the population being studied when the sample is created (Creswell, 2014). The sample size used for this study was 120respondents. This is based on the rule of thumb which suggest using a minimum of 10 times the largest number of structural paths directed at a particular construct in the inner model for the minimum sample size (Hair et, al., 2017). Out of which only 88 questionnaires, equivalent to 73.33% of the questionnaires were completed and returned for analysis. According Nulty (2008), the overall average acceptable response rate is 55.6%. Hence, based on this, the response rate of this study can be said to be adequate.

Instrument Reliability

Table 1 Case Processing Summary

		N	%
Cases	Valid	6	100.0
	Excluded[a]	0	.0
	Total	6	100.0

a. Listwise deletion based on all variables in the procedure.

Table 2 Reliability Statistics

Cronbach's Alpha	N of Items
.723	7

Viechtbauer et. al., (2015), asserted that, if a problem exists with 5% probability in a potential study participant, then the problem can be identified with 95% confidence. Accordingly, a pilot study was conducted to check the reliability of the questionnaire used in this study. From the responses of the pilot survey by the professionals which were 6 in number that is, 5% of a total of 120 expected responses used for the pilot survey as shown in Table 1. Table 2 shows the reliability of the instrument used. According to Nunnally, & Bernstein (1994), Cronbach's alpha normally measures for scale reliability of 0.7 as a cut-off value. Anelli et. al. (2018), asserts that a value ≥ 0.7 indicates high reliability. For that reason, Table 2 shows the Cronbach's alpha coefficients for the instrument used at 0.723 value which is above the acceptable value of 0.7. Thus, highly reliable.

Method of Data Analysis

The method used for data analysis is Partial Least Squared Structural Equation Modelling (PLS-SEM) also, called PLS Path Modelling. According to Hair et. al., (2017), PLS-SEM is primarily used to predict theories in exploratory research such as this paper, by explaining the variance (prediction of the construct) in the endogenous (dependent) variable. Thus, a path model relationship from the exogenous (independent) construct to the target endogenous (dependent) construct was estimated which helped in predicting the relationship among the constructs thereby, achieving both research objectives.

Result/Findings

Leadership Styles That Influence Project Cost Performance

In achieving objective I, the following hypothesis was tested using PLS-SEM.

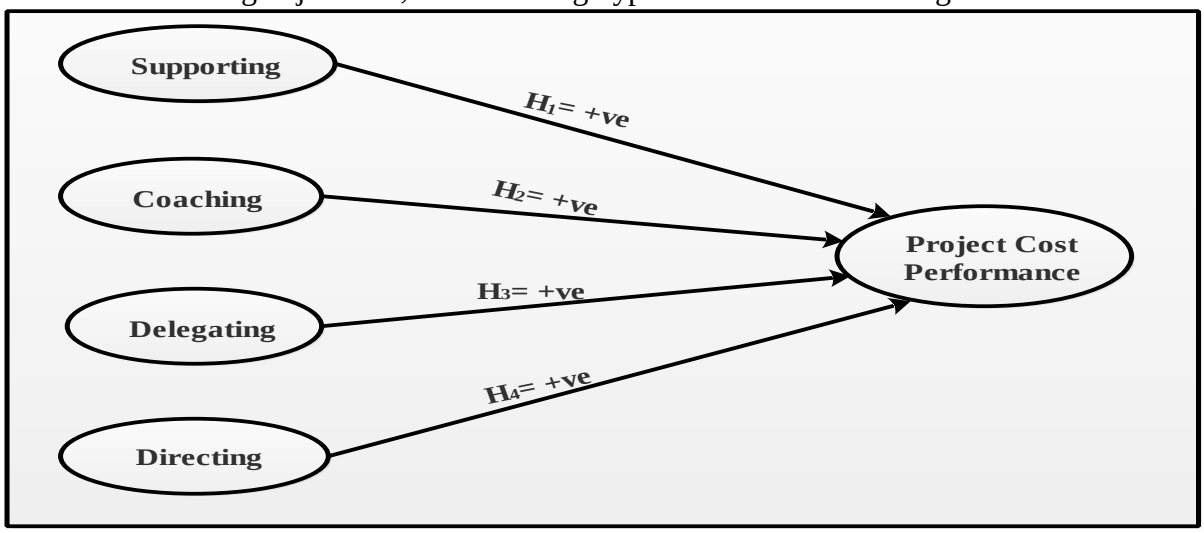

Figure 3: Hypothetical Path Model to Be Confirmed by the use of PLS-SEM

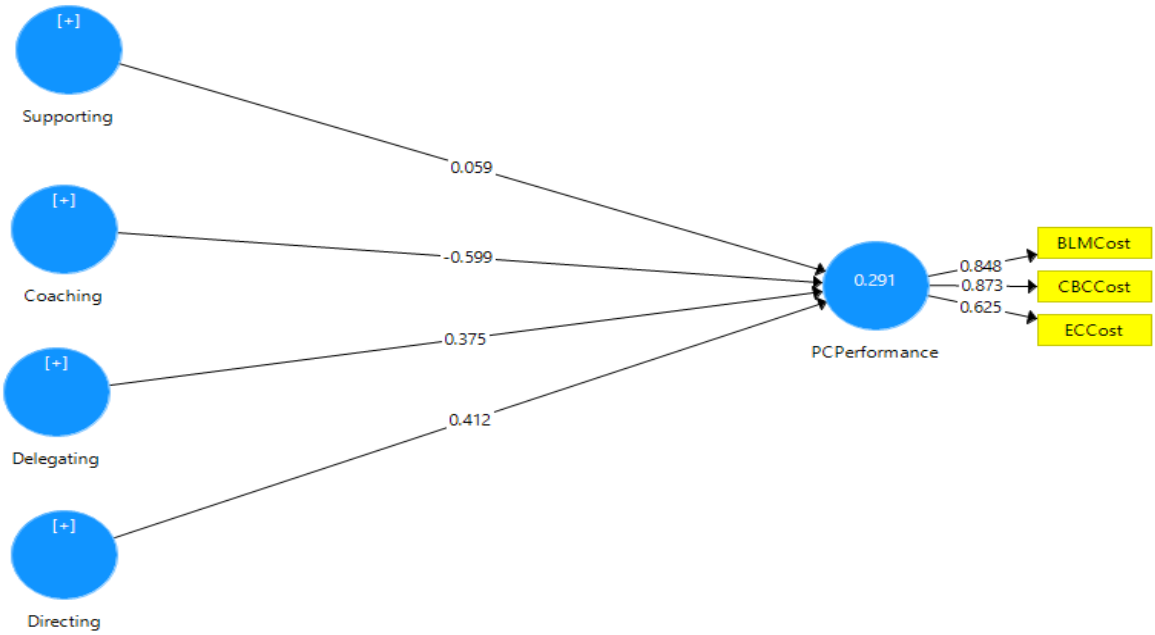

Figure 4: Path Model Confirmed by the use of PLS-SEM

Evaluating Reflective Measurement Model

The Reflective construct'sreliability and validity was assessed to determine the suitability of this model's measurement of the constructs. The reflective measurement model Project cost performance as a 1st order construct was assessed by evaluating its Composite reliability and Convergent Validity (see Table 3).

Table 3 Composite Reliability and Convergent Validity

Construct Name	Observed Variables	Factor Loading	Measurement Model Type	Composite Reliability	Average Variance Extracted (AVE)
Project Cost Performance	BLMCost	0.848	Reflective	0.830	0.624
	CBCCost	0.873			
	ECCost	0.625			

Table 3 shows the factor loadings of each observed variable, the composite reliability and convergent validity of the Project cost performance reflective model. According to Hair et. al., (2017) and Henseler, et al. (2015), the factor loading of each item should be ≥ 0.5, composite reliability ≥ 0.6 and AVE ≥ 0.5. From Table 3, it was observed that the factor loadings of constructing buildings with low maintenance cost (BLMCost) was0.848, constructing building at the cheapest cost (CBCCost) was0.873 and achieving estimated construction cost (ECCost) was 0.625 accordingly, while, the composite reliability was 0.830 and AVE was 0.624 which are all above the stipulated minimums. So, it can be said that the model is reliable and valid.

Structural Model Assessment

In evaluating the Structural model which is the path analysis, the following were assessed: (1) Multicollinearity amongst the latent constructs (2) Path Coefficient (Significance of relationship) and (3) Amount of Variance Explained (R^2 Statistics).

Table 4 Multicollinearity from Exogenous to Endogenous Construct

Prediction Path	Variance Inflation Factor (VIF)
Coaching ⟶ Project Cost Performance	2.215
Delegating ⟶ Project Cost Performance	1.958
Directing ⟶ Project Cost Performance	2.386
Supporting ⟶ Project Cost Performance	1.781

A VIF value of 5 and higher indicate a potential collinearity problem (Hair, et. al., 2014). Hair et al. (2017), added that VIF < 5 means no critical levels of collinearity that is to say, it is acceptable. Hence, from Table 4 the maximum average VIF value was 2.215 which is < 5 meaning no critical levels of collinearity in the structural model.

Table 5 Path Coefficient and Significance of the Relationship

Path	Path Coefficient	Sample Mean	Standard Deviation	T Statistics	P Value
Supporting ⟶ PCPerformance	0.059	0.057	0.122	0.487	0.626
Coaching ⟶ PCPerformance	-0.599	-0.612	0.136	4.394	0.000**
Delegating ⟶ PCPerformance	0.375	0.374	0.111	3.375	0.001**
Directing ⟶ PCPerformance	0.412	0.418	0.172	2.386	0.017*

Note: P < 0.05*, P<0.01** and T- Statistics ≥ 1.96

The hypothetical model in Figure 3 lead to the test of significance (T-test) for the path coefficients of the structural model in Figure 4 which is expressed in Table 5.According to Hair et al. (2014), When the empirical T value is larger than the critical value, it is said that the coefficient is significant at a certain error probability (i.e., significance level) of which the commonly used critical values for two tailed tests are 1.65 (significance level= 10%), 1.96 significance level = 5%), and 2.57 (significance level = 1 %). Therefore, in this study, the error probability used is 5% making the significance level to be 1.96. Looking at the T-values in Table 5, Project Cost Performance was found to bepositively influenced by supporting **(**H_1 Supported with $\beta = 0.059$, T-value 0.487< 1.96, p >0.626), negatively influenced by the Coaching **(**H_2 rejected with $\beta = -0.599$, T-value 4.394> 1.96, p <0.000), positively influenced by delegating **(**H_3 Supported with $\beta = 0.375$, T-value 3.375> 1.96, p <0.001), and positively influenced by directing **(**H_4 Supported with $\beta = 0.412$, T-value 2.386> 1.96, p <0.017). The R^2 Statistics on the endogenous construct as shown in Figure 3 is 0.291 i.e, 29.1% of variance in Project cost Performance was explained by the exogenous constructs. Accordingly, the R^2 is considered to be of moderate effect (Hair et al., 2017). Therefore, from this analysis only three (3) leadership styles significantly influence project cost Performance. with coaching having a significantly negative influence while, delegating and directing are both having a significantly positive influence on project cost Performance.

The Influence of Leadership Styles on each Aspect of Project Cost Performance

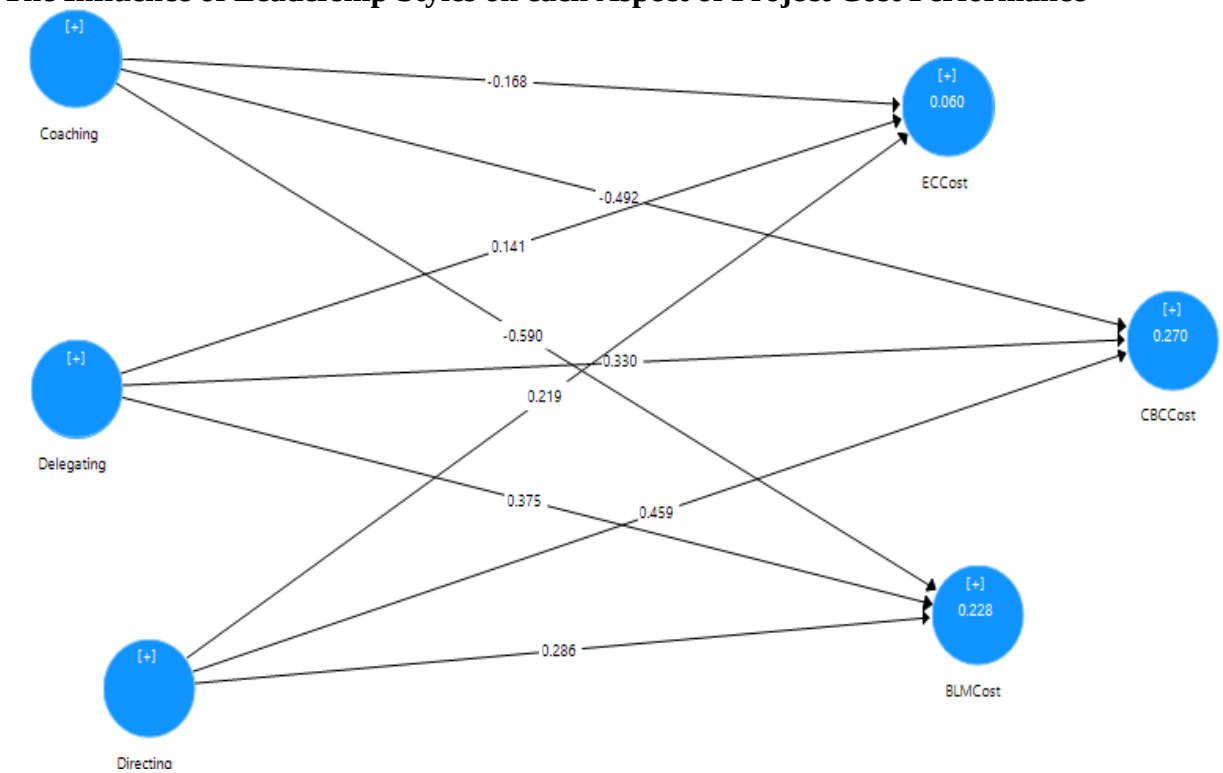

Figure 4 Path Modelling of the Identified Leaderships Styles to the Aspects of Project Cost Performance

Table 6 Path Coefficient, Significance of the Relationship and Effect Size

Path	Path Coefficient	Sample Mean	Standard Deviation	T Statistics	P Value	Effect Size
Coaching → BLMCost	-0.590	-0.591	0.114	5.176	0.000**	0.232
Coaching → CBCCost	-0.492	-0.492	0.127	3.866	0.000**	0.171
Coaching → ECCost	-0.168	-0.174	0.139	1.213	0.226	0.016
Delegating → BLMCost	0.375	0.369	0.124	3.024	0.003*	0.095
Delegating → CBCCost	0.330	0.338	0.111	2.971	0.003*	0.078
Delegating → ECCost	0.141	0.132	0.129	1.099	0.272	0.011
Directing → BLMCost	0.286	0.289	0.146	1.96	0.051*	0.046
Directing → CBCCost	0.459	0.441	0.146	3.141	0.002*	0.125
Directing → ECCost	0.219	0.225	0.133	1.65	0.100	0.022

Note: $P < 0.05$*, $P<0.01$** and T- Statistics ≥ 1.96

Figure 4 and Table 6 are the result of the path modelling analysis of the identified leadership styles' relationship to the aspects of project cost performance.Looking at both Figure 4 and Table 6 Coaching has a significantly negative relationship to both constructing buildings with low maintenance cost and, constructing building at the cheapest cost with a medium effect size of 0.232 and 0.171 respectively (Hair et. al., 2017). Delegating has a significantly positive relationship to both constructing buildings with low maintenance cost and, constructing building at the cheapest cost with and a Small effect size of 0.095 and 0.078 respectively. Lastly, directing also, has a significantly positive relationship to both constructing buildings with low maintenance cost and, constructing building at the cheapest cost with and a combination a Small and medium effect size of 0.046 and 0.125 respectively.

Discussion

From the analysis of objective 1, it was observed that when it has to do with construction project cost performance delegating and directing leadership styles tend to have a significantly positive influence while, coaching tends to have a significantly negative influence on cost performance of the projects. Meanwhile, the analysis ofobjective 2, established that in order to improve project cost performance in the light of constructing buildings with low maintenance cost and, constructing building at the cheapest cost a combination delegating and directing should be employed. Consequently, coaching leadership style will not be of any help rather, it may cripple the expected performance of the project. As for achieving estimated construction cost it seems far-fetched.

Conclusion

It is evident that project leadership is very vital in the construction industry in achieving successon project cost performance. Therefore, this paper established that in order to improve project cost performance in the light of constructing buildings with low maintenance cost and constructing building at the cheapest cost, a combination of delegating and directing leadership styles should be employed.

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