



ANALYZING THE EFFECTS OF CULTURAL DIVERSITY ON PROJECT PERFORMANCE IN THE CONSTRUCTION INDUSTRY

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Abstract

Every client, stakeholder, and project team member involved in a construction project has success as their top priority. However, construction projects frequently cost more than expected, take longer to complete, and don't even meet quality standards. Although it has a bad reputation, the construction business is very important to the economy of the nation, thus it should be made sure that it performs better than it presently does. According to recent research, extra factors linked to people and their interactions in teams may significantly affect project effectiveness, in addition to the technical factors that are typical for influencing construction project performance. "Given the nature of contracting, where joint ventures and partnerships seem to be prominent, culture and cultural differences appear to be one of the significant concerns that need to be dealt with and handled effectively if projects are to be successful". Therefore, the study aimed at highlighting the effects of cultural diversity on project performance in the construction industry. Because culture is regarded as a "soft" issue, empirical measurement of it is challenging. "Communication, trust, knowledge sharing, and integration" were the four cultural variables that were examined and selected to be compared to the five conventional project outcomes of project performance "time, cost, quality, safety, and productivity". 203 participants from construction projects in Colombo, Kaluthara, and Polonnaruwa district received structured questionnaires. The study's findings demonstrated that cultural diversity and project performance were related and that cultural variance affected the success of construction projects.

Keywords: *construction industry, cultural diversity, culture, project performance*

Introduction

Compared to other industries, construction projects worldwide frequently fall behind schedule, go over budget, have poor quality, and experience a lot of accidents. Project failure causes can be found at any stage of the project's lifecycle. "The cause has been attributed to a lack of resources, ineffective communication, poorly defined objectives, an incomplete schedule, poor change management, inadequate control, unclear roles, a lack of management support, and teams that were more concerned with solving technical problems than with the needs of the individuals involved" (Maphosa, 2015). One factor that could determine the success or failure of a project is the diversity of the project team. Most construction projects are carried out by workers of various nationalities, who bring to the team their cultural perspectives. This variety of backgrounds in project teams impacts how successfully construction projects run because it brings cultural variations influenced by distinct individual backgrounds into the workplace, where they typically impact decision-making, thinking, and behavior.



Recruiting individuals with diverse backgrounds to collaborate toward a similar objective, maximizing each team member's contribution, and ensuring that everyone is treated fairly, regardless of their background, are difficult tasks (Ochieng, & Price., 2009). Because cultural diversity is not as concrete as the other characteristics that can be tracked and managed, it is not frequently regarded as a determinant of project success. Therefore, it is in the project manager's best interest to make sure that members of a project team from various backgrounds share the same "motivation, same methods of working, communicating, and planning" to achieve high levels of efficiency and the realization of all potential (Amponsah, 2012). The factors of cultural differences that were chosen for inquiry in this study were information or knowledge sharing, team integration, communication, and trust. These elements have been noted as some team diversity indicators that are connected to project success (Lee - Kelley & Sankey., 2004).

The study's main objective is to find the effects of Cultural Diversity on Project Performance in the Construction Industry. And Sub Objectives are, to find the cultures of the employees working on the construction projects under consideration, to measure the performance of projects, to identify the relationship between cultural diversity and project performance, to examine the ways in which cultural impact has had a positive and negative impact on project performance and recommend the strategies that can be adopted to avoid negative impacts there. The research focuses on selected three ongoing projects (Construction of Stadiumgama 1000 housing units and Orugodawatta housing construction project on Access Engineering, Second Integrated Road Investment Program Rehabilitation / Improvement and Maintenance of 83.14 km Rural Roads in Kalutara District on NCC Limited) and five completed projects (Research Center for Sri Lanka Technological Campus (SLTC) Padukka construction project on Access Engineering, Kottawa - Horana main road reconstruction project on ICC (Pvt) Ltd, Construction and Replacement project of Railway lines and Bridges in Pannipitiya railway track on Sri Lanka Railways, Construction of Polonnaruwa District Secretariat Building on Micro Construction and Construction of Capital TwinPeaks - Luxury Apartments in Colombo on Sanken Lanka) to analyze the effects of cultural impact on their performance.

Literature Review

Cultural Diversity

Cultural diversity affects "every aspect of human orientation, including belief, law, knowledge, the arts, morals, and customs and abilities that people may possess or obtain". Culture is a set of shared beliefs, values, customs, knowledge, and beliefs that can be found in a society. Culture is a universal agreement that ties and controlled people's thoughts, which makes them comparable to and distinct from others. People who have the same culture behaved similarly and shared the same standards, guidelines, precepts, and conduct that distinguish them from people of different cultures (Abosedo, et al., 2013).



Project Performance

The performance of a project within an organization is how well the project achieves its objective (Khan, et al., 2018). Ankrah, (2007) describes Project performance as a measure of project outcomes that can be highlighted in the early stages of the project. Evaluating project outcomes is based on the applications used in the construction process to determine how well the construction project organization has performed in achieving project objectives (Ankrah, 2007). According to Ankrah, (2007), This assessment is used to identify low-performance areas such as high cost and inefficiency in the construction process. Ankrah, (2007) continues It should be emphasized that to enhance project performance in the construction sector, its project result distribution performance must also be improved.

Cultural Diversity and Project Performance in Construction Industry

Cultural differences can have a positive or negative impact on the day-to-day operations of construction enterprises that operate nationally or worldwide, according to prior studies and industry experience (Ernest, 2022). In the construction industry, doing business with people from other nationalities is becoming more and more necessary. As a result, workers in the construction industry may need to develop the skills necessary to deal with coworkers who hold very disparate viewpoints (Brian, 2019). Managing cultural differences well can improve organizational efficiency and give a company a competitive advantage. On the other hand, failure to address cultural differences can lead to major problems such as construction delays and declining production (Kivrak, et al., 2009). Due to the nature of joint ventures, contracts, and procurement internationalization as well as the adoption and transfer of philosophies and new methods, cultural diversity is a crucial issue in the construction industry (Aki, 2015). Understanding and managing cultural diversity can bring several benefits and be crucial to a project's success. On the other hand, if they are not adequately managed, they can cause problems that could threaten the success of the project (Khan, et al., 2018). In project environments, if there are significant cultural value differences, they will last for the duration of the project and their impact on performance may be far greater than that of a broader organization, where the influence of the existing corporate culture may be more important (Chipulu, et al., 2014). Cultural diversity directly or indirectly affects project performance, although there is little evidence of this in construction projects. As a result, more research is needed to determine the interaction between factors affecting cultural diversity and project performance (Khan, et al., 2018). The following categories are used to categorize how cultural differences affect a project (Maphosa, 2015). The level of project formulation results can lead to ambiguous goals and misunderstandings among team members.

- At the project implementation level, cultural differences can lead to "team members' divisions, lack of coordination, and less tolerance" for failure.
- At the outcome evaluation level, cultural variables can lead to "different perceptions of project outcomes, such as time, cost, and quality".



The transparency and engagement of the sector, decision-making, working relationships, and communication effectiveness can all be impacted by culture. Consequently, it can be helpful to comprehend the culture of the construction sector. Projects manage their operations more effectively to prevent misunderstandings and disputes frequently brought on by cultural diversity. The duties of managers are limited by their cultural origins and coordination. It is challenging to predict people's behavior without a thorough understanding of their values (Kuoribo, and Amoah., 2021). In construction projects, the power of perception is crucial, and many decisions are dependent on an individual's perception. "The process through which people select, organize, interpret, retrieve, and respond to information from the environment around them" is how perception has been defined. This thus gives rise to the likelihood that diverse construction projects will achieve varying performance levels or ratings due to the differences in perception and the many cultural variables that may potentially impact project performance (Ankrah, 2007).

Methodology

Type of Study

The quantitative method was used to analyze this study. This is an explanatory study. Because this study focused on analyzing a situation or issue to understand the relationships between factors.

Sampling

The researcher used a convenient sampling technique in this research. 65 Project team members and 155 workers were selected randomly from 8 construction projects within Colombo, Polonnaruwa, and Kalutara districts were examined. Therefore, 220 number of the sample were used for the study to collect important and valuable data for the identification of objectives and interpretation of the findings.

Data Collection Method

The Structured questionnaire collected data from project team members and project workers to get ideas about the study and consists of three sections.

Part A: Questions related to demographic information about the respondents, and project details.

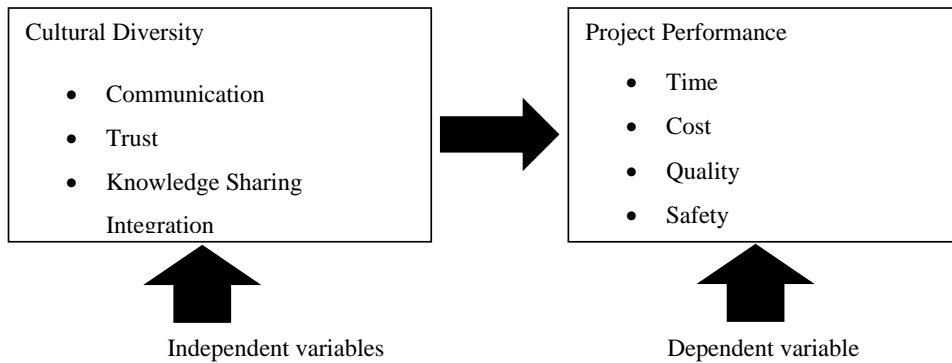
Part B: Questions related to assessing cultural diversity on a 5-point Likert scale.

Part C: Questions related to measuring the project performance on a 5-point Likert scale.

Respondents were asked to respond to questions using a five-point Likert scale. Respondents were asked to rate how much they agreed or disagreed with several assertions about the impact of cultural diversity on project performance. "5=Strongly agree", "4=agree", "3=neutral", "2=disagree", or "1=strongly disagree" were all acceptable responses.



Conceptual Framework



Source: (Maphosa, 2015)

Figure 1: Conceptual Framework for the effects of Cultural Diversity on Project Performance in the Construction Industry

Hypotheses Formulation

- H1: There is a significant effect of Communication on Project Performance.
- H2: There is a significant effect of Trust on Project Performance.
- H3: There is a significant effect of Knowledge Sharing on Project Performance.
- H4: There is a significant effect of Integration on Project Performance.

Results and Discussions

Response rate

220 respondents from the eight construction projects at the six organizations made up the sample size for this study. 17 respondents choose not to respond, leaving 203 respondents who did. According to Table 1, this corresponds to a 92% response rate. This demonstrates a good response rate.

Table 1: Response rate

Questionnaires	Number	Percentage
Filled and collected	203	92.27
Non-Response	17	7.73
Total	220	100

Reliability and Validity Analysis

The Cronbach's Alpha coefficient has been used to assess the reliability of data gathered from 8 projects of the chosen organizations. Table 2 presents the resulting coefficients. All of the coefficients are more than 0.70, making them suitable for further investigation.



Table 2: Cronbach's Alpha coefficient of data collected

Dimensions	Cronbach's alpha value	Number of Items
Communication	0.783	4
Trust	0.898	2
Knowledge Sharing	0.723	5
Integration	0.802	2
Project Performance	0.927	9

Table 3: KMO and Bartlett's Test of data collected

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.907
Bartlett's Test of Sphericity	Approx. Chi-Square	2947.853
	df	231
	Sig.	.000

Kaiser – Meyer – Olkin Measure for all constructs are reported to be above 0.5, fulfilling the sample adequacy (Heppner and Heppner, 2004). Results indicate that the constructs are validity.

Cultural Diversity and Project Performance

Descriptive the variables of Cultural Diversity and Project Performance

Table 4: Descriptive of the variables

Variables	Mean	Standard Deviation
Communication	3.83	0.548
Trust	3.47	0.758
Knowledge Sharing	3.53	0.557
Integration	3.56	0.811
Project Performance	3.58	0.606

The respondents were asked to respond whether their cultural diversity of them influenced project performance. The table shows that knowledge sharing (mean 3.53) and integration (mean 3.56) have been rated as moderately important independent factors. Comparing communication to the other independent variables, it has the highest mean (3.83). However, organizations need to take into account trust, which was rated the lowest by respondents (mean 3.47). The project performance has a mean score of 3.58, which is the second-highest score. The results are shown in Table 4 above.



Bivariate Correlation Analysis of Cultural Diversity and Project Performance

Table 5: Bivariate Correlation Analysis

Variables		Project Performance
Communication	Pearson Correlation	0.534
	Sig. (2-tailed)	0.000
Trust	Pearson Correlation	0.419
	Sig. (2-tailed)	0.000
Knowledge Sharing	Pearson Correlation	0.634
	Sig. (2-tailed)	0.000
Integration	Pearson Correlation	0.674
	Sig. (2-tailed)	0.000

Bivariate correlation analysis is used to establish the relationship between the independent and dependent variables, as well as the direction of the association. The Pearson correlation coefficient was utilized in this study to demonstrate the direction and importance of the association. According to the results, it was clear that communication, trust, knowledge sharing, and integration had a positive relationship with the dependent variable, project performance.

Regression Analysis of Cultural Diversity and Project Performance

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.756 ^a	.572	.563	.400	.572	66.066	4	198	.000

a. Predictors: (Constant), Integration, Trust, Communication, Knowledge Sharing

To prevent the R^2 from increasing when more independent variables are included in the model, the adjusted R^2 is also taken into account. It was clear from the results shown in Table 6 that the adjusted R square value was 0.563 and the significant change of ($p < 0.05$), which suggests that cultural diversity had an impact on project performance. As a result, it was shown that the four independent variables can be attributed to 56.3% of the project performance and other factors are attributed to the remaining 43.7%.



Table 7: ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.383	4	10.596	66.066	.000 ^b
	Residual	31.755	198	.160		
	Total	74.138	202			
a. Dependent Variable: Project Performance						
b. Predictors: (Constant), Integration, Trust, Communication, Knowledge Sharing						

Analysis of variance (ANOVA) is a statistical method used to determine if the means of two or more groups differ from one another significantly. It evaluates how well the regression model predicted factors that affected the dependent variable. The study's results showed that the significant value was 0.000, which was less than 0.05. As a result of the substantial p-value ($\text{sig} = 0.000 < 0.05$), the entire model fits nicely. Thus, the model successfully predicted how the effects of four independent factors will affect project performance, and it provides an overall fit of data. The results are indicated in table 7 above.

Table 8: Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	.478	.226		2.111	.036	.031	.924
Communication	.181	.063	.164	2.893	.004	.058	.305
Trust	.109	.042	.137	2.611	.010	.027	.192
Knowledge Sharing	.284	.069	.261	4.134	.000	.148	.419
Integration	.290	.047	.388	6.171	.000	.197	.382
a. Dependent Variable: Project Performance							

Table 8 above displays the results of the regression coefficients, t-statistics, standard errors of the estimates, and p-values. Additionally, standardized regression coefficients were taken into account under predictive modeling to examine the variance in project performance that is accounted for by communication, trust, knowledge sharing, and integration. The significance values must be less than 0.05 to be recognized as significant when considering the standardized beta value of the four



independent variables. Furthermore, the beta result values were positive, demonstrating a favorable influence.

The resultant value for the effects of communication on project performance was 0.164 units and a significant value of 0.004 was obtained. More specifically, it was discovered that increasing one unit of communication would result in an increasing project performance of 0.164 units. It was clear from the outcomes of the second independent variable that the effect of trust on project performance was 0.137 units. A significant value of 0.010 was used to determine the significance of this impact. Increasing one unit of trust would increase project performance by 0.137 units. The value derived for the effects of knowledge sharing on project performance was 0.261 units with a significant value of 0.000. Increasing one unit of knowledge sharing would increase project performance by 0.261 units. The results showed that the effects of integration on project performance had a value of 0.388 units and a significance level of 0.000. Increasing one unit of integration would increase project performance by 0.388 units. Thus, it became clear that these four variables positively and significantly affected project performance. As a result, the null hypotheses were rejected and all four hypotheses were accepted.

Hypothesis Testing

Table 9: Hypothesis Testing

Hypotheses	Significance Value	Accepted/ Rejected
H1	0.004	Accepted
H2	0.010	Accepted
H3	0.000	Accepted
H4	0.000	Accepted

According to the H1, Communication has a significant effect on Project Performance. Since the significant value is 0.004 (sig.<0.05). According to the H2, Trust has a significant effect on Project Performance. Since the significant value is 0.010 (sig.<0.05). According to the H3, Knowledge Sharing has a significant effect on Project Performance. Since the significant value is 0.000 (sig.<0.05). According to the H4, Integration has a significant effect on Project Performance. Since the significant value is 0.000 (sig.<0.05).

Discussions

This study was carried out to analyze the effects of cultural diversity on project performance in the construction industry, considering how important it is. Four variables were chosen out of the several independent cultural diversity variables that have been shown to have an impact on project performance after reviewing prior research. Communication, trust, knowledge sharing, and integration were the



independent variables utilized to assess the impact of cultural diversity on project performance. The results of this study's regression analysis showed that there was both a positive and a significant impact of cultural diversity on project performance.

Through this study, the findings of earlier literature were confirmed and supported. This gives project managers tips on handling cultural diversity in project teams from the start. Eight projects from six different organizations provided the data for the study, which restricts the generalizability of the results. The results of such a study might aid in a much deeper understanding of the interactions among the components if they were expanded to include numerous organizations and a range of projects. Studying the impact of each element impacting cultural diversity on the variables affecting project performance would also be fascinating. It can be concluded that research on cultural diversity in construction projects will improve efficiency.

The findings showed that there was a positive and significant impact between communication and project performance when taking into account the outcomes obtained. The findings of earlier studies also demonstrated how effective communication improved project performance. If communication is properly managed, organizations will benefit because various communication patterns will encourage and share various perceptions and understandings among one another. This function could help in delegating and overseeing teamwork. The findings of this study showed a positive and significant impact between trust and project performance. There is a favorable and strong connection between trust and project performance, according to an earlier study as shown by Maphosa (2015). As a result, the hypothesis that was formed based on the outcomes of earlier research was confirmed and verified by the findings of this study. Similar to this, knowledge sharing across many sectors would benefit an organization in many ways. Managers of human resources should think about ways to encourage knowledge sharing among staff members by offering ongoing training and development. The results also showed that knowledge sharing positively and significantly impacts project performance. The findings of this study showed a positive and significant impact between integration and project performance. The integration and project performance have a favorable and considerable impact, according to earlier research by Khan, et al., (2018).

This feature can successfully foster a healthy workplace culture, motivate employees, and improve teamwork within a business. Finally, the findings of this study might be used to provide suggestions to the company's senior management about the need to emphasise managing cultural diversity for projects to perform better inside the organization. Additionally, it is advised that organizational leaders create equitable employment policies, laws, and procedures regardless of an employee's sociocultural background, ethnicity, sexual orientation, or gender to foster cooperation, original thought, and



innovation within the company. To increase variation and foster a creative project environment, it is important to take into account the cultural diversity of the workforce.

Conclusion and Recommendations

The main concern for every organization across all industries is cultural diversity. Understanding cultural differences and skillfully navigating them within an organization can positively impact the project's outcome in several ways. The same has been looked into using information from the project management teams of a multinational organization. According to the findings, various characteristics that affect cultural diversity, like communication, trust, knowledge sharing, and integration, benefit a project's performance. This gives project managers some tips on how to handle the cultural variety in project teams from the start. Eight initiatives from six different organizations provided the data for the study, which restricts the generalizability of the results. The results of such a study might aid in a much deeper understanding of the interactions among the components if they were expanded to include numerous organizations and a range of projects. Studying the impact of each element impacting cultural diversity on the variables affecting project performance would also be fascinating. It can be concluded that research on cultural diversity in construction projects will improve efficiency.

Based on the collected data and analysis findings, the researcher recommends that project teams be made aware of the diverse backgrounds of members through management efforts, training, or presentations by team members about the diverse cultures encountered in projects. Participating in team-building activities is one way to accomplish this. This will help team members understand the perspectives of other team members through verbal and non-verbal communication, as well as understand language issues within the team. This will result in a more effective and efficient communication process among team members, which will ultimately lead to motivation among team members and better project performance. Each project team establishes its own culture for that particular project. That's because, despite some similarities, projects and people are not the same. Each member's cultural demands and background must be taken into account to ensure that each member achieves at their highest level without feeling insecure about being judged for being different. Policy or strategy development should emphasise finding more concrete ways to incorporate cultural differences into organizational systems and make them part of the organizational culture. It may also be possible to develop a general model that can be used to predict project success while accounting for the impact of cultural diversity.

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