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Cross-Cultural Dynamics and Teamwork Effectiveness in the Construction Industry: A Review Exploratory Study of Professional Interactions in Nigeria

Akani Prince Oluleye[1], Adebiyi Adeniyi Mayowa[2]

Abstract

The construction industry increasingly relies on multicultural teams as global expansion and workforce diversity intensify. However, cross-cultural dynamics that foster innovation also pose significant challenges to teamwork in construction projects. This study is a review and examines the impact of cross-cultural factors on the effectiveness of cross-functional collaboration among construction professionals in Nigeria. A quantitative research design was employed, and structured questionnaires were administered to 370 architects, engineers, quantity surveyors, and builders selected through convenience sampling. Data were analysed using Exploratory Factor Analysis, Mean Item Scores, percentages, and frequency distributions to identify key determinants of teamwork effectiveness. Results indicate that external stakeholder influence, interpersonal relationships, and clear role definition are vital for productive collaboration. Moreover, adaptability, cultural diversity, and team cohesion significantly enhance project outcomes. Targeted training and technological integration are essential for overcoming multidisciplinary challenges. Furthermore, leadership style and effective communication underpin a culture that supports innovation and sustainable performance. Construction firms should enhance interdepartmental communication, clearly delineate responsibilities, and leverage diverse expertise to optimize teamwork. Implementing these measures is expected to mitigate project risks, improve overall performance, and promote continuous improvement. This study contributes empirical evidence on the determinants of successful cross-functional collaboration in Nigeria's construction sector and offers practical recommendations for optimizing project delivery. These findings establish a benchmark for improvement.

✉ Adebiyi Adeniyi Mayowa: mayfoot90@yahoo.com

[1]Department of Building, Federal University of Technology Akure

[2]Department of Building Technology, Federal Polytechnic Offa

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1.0 Introduction

This study is grounded in the real-world scenario of Nigeria's construction industry - a sector emblematic of emerging economies where rapid expansion and globalization have led to increasingly multicultural workforces. In practice, construction projects in Nigeria involve teams of architects, engineers, contractors, and suppliers drawn from diverse cultural backgrounds. These professionals bring varied perspectives, values, and communication styles to the table, which can both enrich the creative process and introduce challenges to effective collaboration.

In the field, project teams are typically temporary and rotate frequently, complicating the development of cohesive working relationships. The inherent diversity, while a potential source of innovation and enhanced problem-solving, also raises practical issues such as miscommunication, conflicting cultural norms, and differing approaches to conflict resolution and decision-making. These challenges are compounded by the dynamic and often unpredictable environments in which construction projects are executed.

By investigating the impact of cross-cultural dynamics on teamwork effectiveness, the study addresses a critical gap in empirical research. It seeks to provide actionable insights and recommendations that can help construction firms improve inter - departmental communication, clarify roles, and better manage cultural diversity. Ultimately, the findings are intended to inform policy and guide practical strategies for enhancing team performance, reducing project risks, and ensuring successful project delivery in a highly competitive construction market.

2.0 Literature Review

2.1 Teamwork in the Construction Industry

The determinants of successful teamwork in the construction industry are multifaceted. Jupir (2023) emphasizes that project complexity, uncertainty, and structure significantly influence team coordination levels. This assertion is supported by Zureehan and Lee (2022), who found that top management support and collaborative team dynamics positively affect project performance in the Malaysian construction context. Their findings reinforce the notion that leadership and organizational support are critical in fostering an environment conducive to effective teamwork. The benefits of collaboration in construction projects are well-documented. Atkinson *et al.* (2022) identify that improved collaboration leads to significant reductions in project costs and schedules, alongside enhanced buildability and responsiveness to user requirements. This aligns with findings from Gao *et al*. (2020), who assert that familiar collaboration practices positively impact project quality, emphasizing the necessity of strong relationships between clients and contractors.

Furthermore, Cook and Brunton (2017) posits that a collaborative approach is essential for achieving sustainable construction outcomes. The research indicates that successful collaboration fosters learning and innovation, which are critical for project success and future collaboration opportunities. This sentiment is echoed by Fan (2023), who notes that collaborative project management encompasses

the entire project lifecycle, aiming to mitigate obstacles and minimize waste, thereby ensuring high-quality project completion. Moreover, Memon *et al*. (2021) highlight that while teams may express a willingness to collaborate duringtheinitial project phase, this intent often diminishes during execution, leading to challenges in later stages. This observation underscores the importance of sustained commitment to collaboration throughout the project lifecycle. Moradi and Kähkönen (2022) further elaborate on this by discussing how integrated project delivery (IPD) models enhance collaboration, suggesting that the adoption of such frameworks can mitigate the risks associated with teamwork failures.

Despite the recognized benefits of collaboration, several challenges hinder effective teamwork in the construction industry. Philemon (2018) discusses the diverse characteristics of organizations involved in construction, which can lead to misalignment in goals and communication breakdowns. Bohnstedt and Wandahl (2019) further highlight the disagreement among experts regarding the productivity and competitiveness of the construction industry, suggesting that collaboration is often undermined by entrenched adversarial relationships. The fragmentation of the construction industry is another significant barrier to effective teamwork. As noted by Cook & Brunton (2017), poor communication and industry-level fragmentation contribute to adversarial relationships, complicating collaboration efforts. This is compounded by the findings of Fan (2023), who argue that inadequate knowledge exchange among project participants is a persistent issue that undermines collaborative performance.

2.2 Cross-Cultural Diversity in Construction Industry

Cultural diversity introduces new perspectives and ideas, enhancing innovation within project teams. However, it also presents challenges, such as differing work ethics and values (Drouin *et al*., 2013). Hofstede's cultural dimensions theory is often used to analyze cultural differences, highlighting variables like individualism vs. collectivism and power distance, which affect teamwork (Hofstede, 2001). The organizational culture within construction firms is distinct from that of other industries, influencing their competitiveness. Nukić (2018) emphasizes that the characteristics of organizational culture in construction significantly differ from those in other sectors, which can affect overall performance. The construction industry often exhibits a fragmented culture due to its project-based nature, leading to challenges in maintaining a cohesive organizational identity. Loosemore *et al*. (2011) discuss the "politics of sameness" prevalent in the Australian construction industry, where there is a tendency to normalize poor cross-cultural relations. This phenomenon can lead to a lack of inclusivity and hinder the potential benefits of a diverse workforce. Loosemore *et al*. (2011) argue that managers must recognize and address these cultural dynamics to foster a more inclusive environment that leverages the strengths of a multicultural workforce.

Management of multicultural teams is crucial for project success in the construction industry. Loosemore *et al*. (2012) propose management strategies that harness cultural diversity, suggesting that organizations can improve productivity and innovation by embracing diversity as an asset. This perspective contrasts with the traditional view of diversity as a challenge that needs to be managed. Moreover, effective communication is vital in multicultural teams, as misunderstandings can cause project delays and conflicts. Research suggests that high-context cultures, such as Japan and South Korea, rely on indirect communication, while low-context cultures, like the U.S. and Germany, prefer direct communication (Hall, 1976). In construction, where precise communication is essential for safety and efficiency, these

differences can create significant challenges. Communication training and standardized protocols have been recommended to mitigate misunderstandings (Ochieng & Price, 2010).

Gender diversity remains a pressing issue in the construction industry, with significant implications for organizational culture and performance. Seidu *et al*. (2022) investigate gender diversity in the UK construction sector, revealing that traditional gender roles continue to hinder progress towards inclusivity. Their research suggests that a more diverse workforce can enhance creativity and problem-solving capabilities, ultimately benefiting project outcomes. Similarly, Francis and Michielsens (2021) explore the significance of inclusion for women in the architecture, engineering, and construction (AEC) industry. They argue that despite efforts to promote diversity, discriminatory practices persist, leading to higher turnover rates among female employees. This underscores the need for construction firms to adopt comprehensive diversity management strategies that not only focus on recruitment but also on retention and career advancement for women.

Cultural differences can significantly impact knowledge - sharing activities within construction projects. Adi and Musbah (2017) identify cultural differences as a major barrier to effective collaboration, which can negatively affect project performance. The importance of understanding cultural dynamics will facilitate better knowledge that flows among team members. This is particularly relevant in multinational projects where team members come from various cultural backgrounds. Moreover, Liu *et al*. (2022) discuss stressors in multicultural construction environments, noting that intercultural interactions can exacerbate mental health issues among workers. The Liu *et al*. (2022) emphasize the need for construction firms to implement strategies that mitigate these stressors, thereby enhancing overall project performance and worker well-being.

2.3 Influence of Cross-Cultural Dynamics on the Effectiveness of Cross-Functional Teamwork in Construction Projects

As stated by Francis and Michielsens (2021), the influence of cross-cultural dynamics on teamwork effectiveness in the construction industry is a multifaceted issue that requires a comprehensive understanding of various factors, including cultural orientations, communication styles, and organizational practices. Cross-cultural interactions in construction projects are particularly pronounced in developing countries, where foreign participants often play a crucial role in project execution. Rajenthiran *et al.* (2020) highlighted that these interactions are vital for negotiations, decision-making, and problem - solving within construction organizations. Yap *et al*. (2020) argued that effective cross-cultural teamwork necessitates an understanding of the social aspects influenced by cultural differences, which can shape team members' skills and interactions.

Moreover, the role of organizational culture in facilitating effective teamwork cannot be overstated. Körner *et al*. (2015) found that teams with a dynamic organizational culture exhibited higher functioning scores compared to those in more rigid environments. A supportive organizational culture enhances teamwork by promoting open communication and collaboration among team members. Similarly, Koolwijk *et al.* (2020) emphasize the importance of a no-blame culture in fostering innovation and encouraging team members to share ideas without fear of retribution, which is particularly relevant in the high-stakes environment of construction projects. Leadership also plays a pivotal role in shaping the effectiveness of cross-cultural teams. Transformational leadership, as discussed by Tabassi *et al.* (2014), is essential for managing diverse teams in construction firms. Effective leaders are required to navigate the complexities of cultural differences and foster an inclusive environment that values each member's contributions. This aligns with the findings of

Gunasekera and Chong, who argue that leadership styles significantly influence team dynamics and project management performance in Sri Lankan construction organizations (Gunasekera & Chong, 2018).

The cultural awareness and dimensions of teamwork are also critical in understanding how diverse teams can leverage their differences for improved problem-solving and decision-making. Studies indicate that multicultural teams often outperform homogeneous teams due to the variety of perspectives and approaches they bring to the table (Latif, 2020). This is particularly relevant in the construction industry, where complex problems require innovative solutions. However, as Cook & Brunton (2017) noted that, cultural differences can also lead to misunderstandings and conflicts that hinder teamwork effectiveness. Thus, it is imperative for construction organizations to implement strategies that promote cultural competence and understanding among team members. Theinfluence of cross-cultural dynamics on teamwork effectiveness in the construction industry is a complex interplay of cultural orientations, organizational culture, leadership styles, and team dynamics. Table 1 summarizes the literature reviewed on the influence of cross-cultural dynamics on the effectiveness of cross-functional teamwork in construction projects.

Table 1: Summarised Literature Reviewed on Influence of Cross-Cultural Dynamics on the Effectiveness of Cross-Functional Teamwork in Construction projects

Code	Influence of Cross-Cultural Dynamics	Description	Sources
CCD 1	Cultural Awareness	The level of awareness and understanding of diverse cultures within the team	Loosemore *et al*. (2012); Adu & Opawole, (2019); Koolwijk *et al.* (2020).
CCD 2	Communication Styles	Differences in communication patterns across cultures and their impact on teamwork.	Adi & Musbah (2017); Gao *et al*. (2020).
CCD 3	Language Barriers	The effect of language differences on team collaboration and project outcomes	George & Loosemore (2018).
CCD 4	Conflict Resolution Strategies	The role of culturally influenced approaches to resolving conflicts within cross-functional teams	Cook & Brunton, (2017); Berglund *et al.* (2023).
CCD 5	Leadership Adaptability	The flexibility of leaders in accommodating cultural diversity within the team.	Madikizela & Michell (2022); Berglund *et al.* (2023).
CCD 6	Decision-Making Processes	How different cultural perspectives influence decision-making in cross-functional teams	Cook & Brunton, (2017); Berglund *et al*. (2023).
CCD 7	Trust Building	The impact of cultural differences on building trust within the team.	Rajenthiran *et al*. (2020); Adu & Opawole, (2019).
CCD 8	Team Cohesion	The influence of cultural diversity on the cohesion and unity of the team.	Gao *et al*. (2020); Atkinson *et al*. (2022).
CCD 9	Power Distance	Variations in hierarchical views across cultures and their effect on teamwork dynamics.	George & Loosemore (2018); Berglund *et al*. (2023).

CCD 10	Attitudes Toward Authority	Cultural differences in the perception of authority and their impact on cross-functional collaboration.	Philemon (2018); Adu & Opawole, (2019).
CCD 11	Cultural Sensitivity Training	The effectiveness of cultural sensitivity training in enhancing cross-functional teamwork.	Atkinson *et al*. (2022); Moradi *et al*. (2022).
CCD 12	Shared Goals and Objectives	The influence of cultural differences on aligning team members toward common goals.	Rajenthiran *et al*. (2020); Gao *et al.* (2020).
CCD 13	Flexibility and Adaptability	The ability of team members to adapt to cultural differences in a cross-functional team environment.	Gao *et al*. (2020);
CCD 14	Time Orientation	The impact of differing cultural attitudes toward time management and deadlines on teamwork effectiveness.	Rajenthiran *et al*. (2020); Francis & Michielsens (2021).
CCD 15	Social Interaction Norms	How varying social interaction norms across cultures affect team bonding and collaboration.	Seidu *et al*. (2022).
CCD 16	Perception of Roles and Responsibilities	Cultural differences in how roles and responsibilities are perceived within cross-functional teams.	Akıner, (2014); Nukić (2018).
CCD 17	Cultural Integration in Project Management	The role of integrating cultural considerations into project management practices for effective teamwork	Loosemore *et al.* (2012); Yap *et al.* (2020).
CCD 18	Workplace Inclusivity	The influence of inclusive practices on cross-cultural collaboration and teamwork effectiveness.	Adu & Opawole, (2019)
CCD 19	Feedback Mechanisms	Differences in feedback delivery and reception across cultures and their effect on teamwork	Rajenthiran *et al*. 2020); Yap *et al*. (2020)
CCD 20	Respect for Cultural Traditions	The impact of respecting cultural traditions on fostering a positive team environment	Loosemore *et al*. (2012)
CCD 21	Team Diversity Management	The effectiveness of strategies for managing cultural diversity within cross-functional teams.	Moradi & Kähkönen (2022).
CCD 22	Cross-Cultural Leadership Competence	The role of cross-cultural leadership skills in driving the success of cross-functional teams.	Memon *et al*. (2021); Zureehan & Lee, (2022); Jupir (2023).

3.0 Research Methodology

The research employed a quantitative methodology, utilizing a structured questionnaire to collect extensive data within a defined timeframe. Quantitative research plays a crucial role in identifying patterns, trends, and

correlations among variables through statistical techniques, ensuring a systematic and objective evaluation of project performance. This approach provides a reliable means of analyzing complex relationships among variables, making it particularly useful for studies involving large populations.

The study population comprises construction professionals, including architects, quantity surveyors, builders, and engineers, who are actively engaged in construction projects in Lagos State. Lagos was selected as the study location due to its significant infrastructure development, rapid urbanization, and extensive construction activities. The high concentration of construction professionals in this region ensures the availability of a robust and diverse sample for the study. By applying the Yamane formula with a precision level of 10%, a statistically representative sample size of 370 construction professionals was determined from the total population of 5,330 individuals.

A post-positivist philosophical perspective guided this quantitative study in achieving its research objectives. This perspective recognizes the importance of empirical data while acknowledging potential limitations in absolute objectivity. A structured questionnaire was developed to systematically gather responses on factors influencing cross-cultural dynamics and their impact on the effectiveness of cross-functional teamwork among construction professionals in Nigeria. The questionnaire incorporated a five-point Likert scale, with response options ranging from 5 = "Strongly Agree" to 1 = "Strongly Disagree," allowing for a nuanced assessment of participant perceptions and attitudes.

The questionnaire was distributed to construction professionals in Lagos State through both paper-based and electronic means to maximize accessibility and response rates. A combination of snowballing and convenience sampling techniques was adopted to reach a wide range of respondents, ensuring the inclusion of professionals with diverse expertise and experience levels. Prior to the main survey, a pilot study was conducted using a small sample of respondents to assess the clarity, coherence, and relevance of the questionnaire items. Feedback obtained from the pilot study was utilized to refine and enhance the research instrument, thereby improving its validity and effectiveness. Ultimately, 300 out of the 370 distributed questionnaires were successfully completed and returned, yielding an overall response rate of 84%.

Data analysis was conducted using specialized statistical software, including the Statistical Package for Social Sciences (SPSS) and Microsoft Excel (MS Excel), to facilitate both descriptive and inferential statistical analysis. To ensure the reliability of the research instrument, a reliability test was performed, resulting in a Cronbach's alpha coefficient of 0.781 for the 22 examined variables. This reliability coefficient is considered moderate and acceptable, indicating consistency in the measurement scale. Additionally, the Mean Item Score (MIS) for each variable was computed and ranked in descending order before conducting an Exploratory Factor Analysis (EFA). The EFA was instrumental in regrouping the identified factors into manageable subscales, improving the clarity and interpretability of the findings. Furthermore, standard deviation (SD) values were calculated to assess the degree of variability in the responses concerning factors influencing the effectiveness of cross-functional teamwork among construction professionals.

4.0 Results

4.1 Background information of respondents

The majority of the professions in the Nigerian construction industry were well represented in this study; out of construction professionals

sampled, 97 were builders, representing 32.3% of the entire population. 27.7% of the respondents were quantity surveyors, with a total number of 83: 64 civil engineers were well represented, which accounts for 21.3%, while architects were least represented with 56 professionals (18.7%). Moreover, the respondents sampled were largely well-educated. Academic credentials of the professionals sampled shows that 44.3% are with a Master's degree (M.Sc.). 31.3% possess a Higher National Diploma (HND), Bachelor of Science (B.Sc.), Bachelor of Technology (B.Tech.), or Postgraduate Diploma (PGD). While 10% possess PhD certificates. This high degree of education indicates that the professional community places a high value on advanced knowledge and abilities. Analysis shows that there is a notable concentration of professionals with a large amount of experience in terms of years of practice. Notably, 40.3% of respondents had practised for 6–10 years and those with 11 to 15 years of experience, who make up 36.7% of the sampled professionals. While the presence of seasoned professionals (12.0% with 16 to 20 years and 5.0% with over 20 years). The relatively low representation of professionals with 1 to 5 years of experience (6.0%) suggests that entry-level positions may be less common in this context. Table 2 displays the demographic information of the respondents.

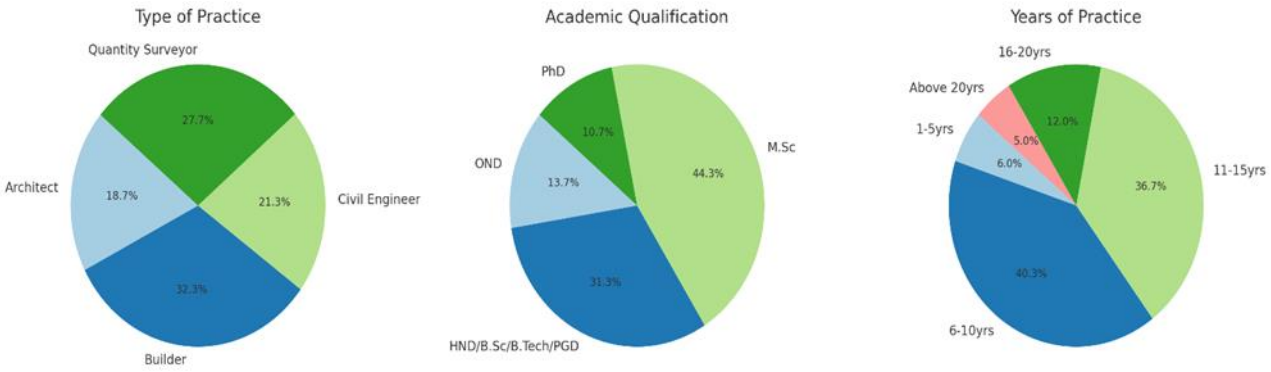

Fig. 1: Graphical Presentation: Background Information of Respondents

4.2 Ranking of Influence of Cross-Cultural Dynamics on Cross-Functional Teamwork Effectiveness

The analysis of the factors influencing the effectiveness of cross-functional teamwork among construction professionals was conducted and revealed. MIS was used to rank the identified influential factors in descending order. Likewise, the most significant factor was determined by SD. Table 2 illustrates key factors impacting the effectiveness of cross-cultural dynamics in cross-functional teams among construction professionals ranked by their MIS and SD. Leading the list is the perception of roles and responsibilities, with a MIS of 3.34, underscoring notable cultural differences in role interpretation within teams. This finding highlights the critical need for clear communication and an appreciation of diverse cultural perspectives to strengthen collaboration. Close behind, leadership adaptability holds the second rank with a MIS of 3.33, suggesting that leaders who embrace cultural diversity tend to manage cross-functional teams more effectively. Cultural integration in project management ranks third with a MIS of 3.30, pointing to the value of embedding cultural awareness into project practices to improve teamwork. Language barriers, also with a mean score of 3.30, emphasize the additional challenges posed by linguistic differences, which can impede collaboration and impact project success.

4.3 Factor analysis for Influence of Cross-Cultural Dynamics on Cross-Functional Teamwork Effectiveness

Factor analysis was carried out to identify the influential factors that might be measuring elements of the same underlying dimensions. Prior to performing the principal component analysis, the data's suitability was assessed. Prior to performing the principal component analysis, the appropriateness of the data was assessed. Kaiser-Meyer-Olkin (KMO) was used to measure the sampling adequacy by checking if the data distribution was sufficient for factor analysis. Field (2009) suggests that a data set is suitable for factor analysis if it achieves a KMO score of 0.50 and a Bartlett's test of sphericity where ($p<0.05$). The KMO index value is 0.760 (higher than 0.5), and the Bartlett's test of sphericity is significant ($p = 0.000$). According to Table 4, the sampling is sufficient for factor analysis.

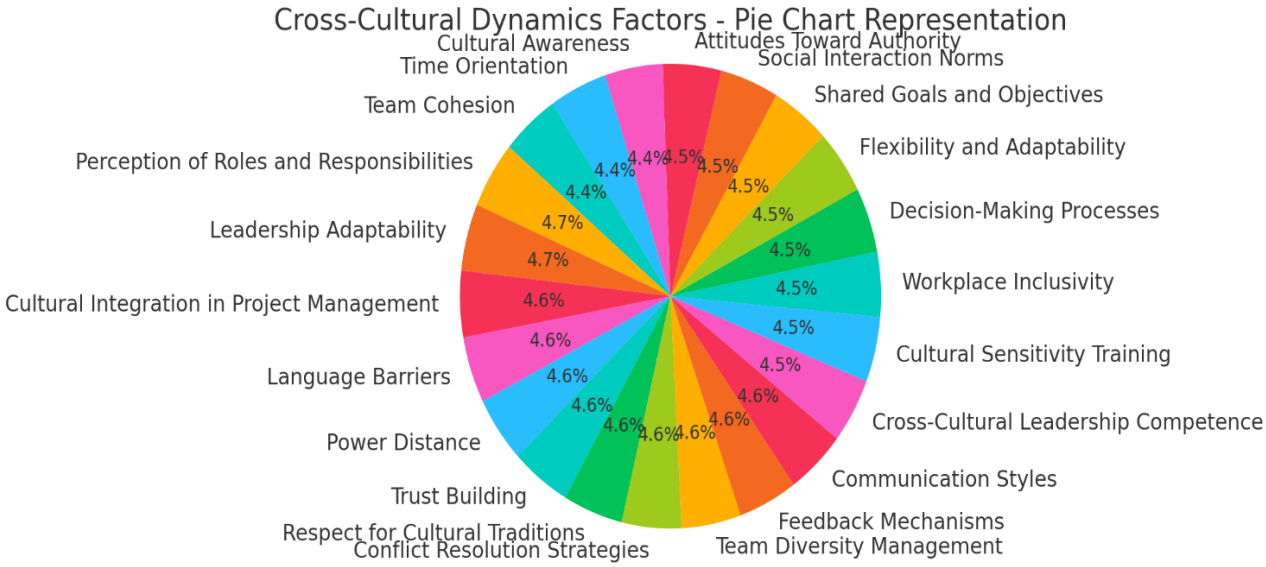

Fig. 2: Graphical Presentation of the Influence of Cross-Cultural Dynamics on Cross-Functional teamwork effectiveness

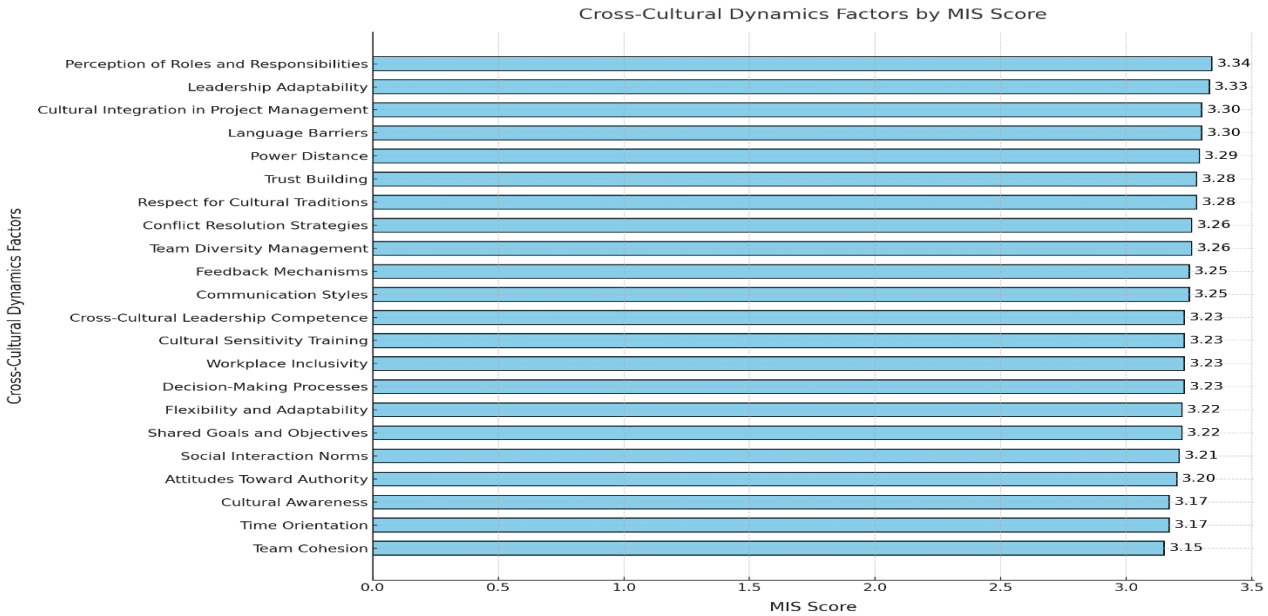

Fig 3: Graphical Presentation of the Influence of Cross-Cultural Dynamics on Cross-Functional teamwork effectiveness

Table 2: KMO and Bartlett's Test for Influence of Cross-Cultural Dynamics on Cross-Functional Teamwork Effectiveness

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.512
Bartlett's Test of Sphericity	Approx. Chi-Square	261.800
	Df	231
	Sig.	0.080

Table 2 reveals that 10 components with eigenvalues greater than 1.0 were extracted using the factor loading of 0.30 as the cut-off point, which was recommended by Pallant (2005). The TVE by each component extracted is as follows: component 1 (7.68%), component 2 (6.67%), component 3 (6.45%), component 4 (6.03%), component 5 (5.66%), component 6 (5.26%), component 7 (5.08%), component 8 (4.97%), component 9 (4.73%), and component 10 (4.61%). Therefore, the final statistics of the principal component analysis and the components extracted accounted for approximately 57% of the total cumulative variance that exists among the factors, since it is very rare to neatly divide behaviour into different groups that function independently of each other. Therefore, if there is a connection between the components, using an orthogonal rotation will result in the loss of important information; in theory, an oblique rotation should produce a more accurate answer. Since it is extremely uncommon to neatly divide behavior into distinct groups that function independently of one another, the oblique rotation method known as Oblimin rotation was chosen over the orthogonal rotation method known as Varimax. This is because in the social sciences, some sort of correlation is typically expected to exist among the factors. Additionally, oblique and orthogonal rotation yield nearly equal findings if there is no association between the variables (Costello & Osborne, 2005). The pattern matrix expresses the coefficients for the linear combination of variables measured. Negative factor loadings indicated that the variables are to be interpreted in the opposite direction. However, this does not exclude them from the constructs (Burns and Grove 2010).

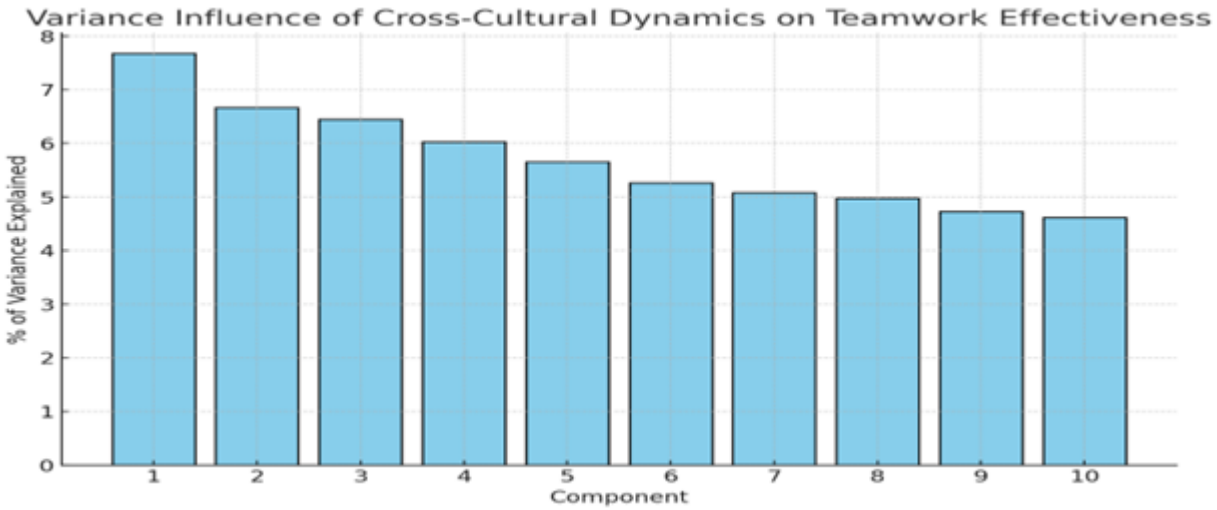

Fig 4.: Variance of cross-cultural Dynamics on Teamwork Effectiveness

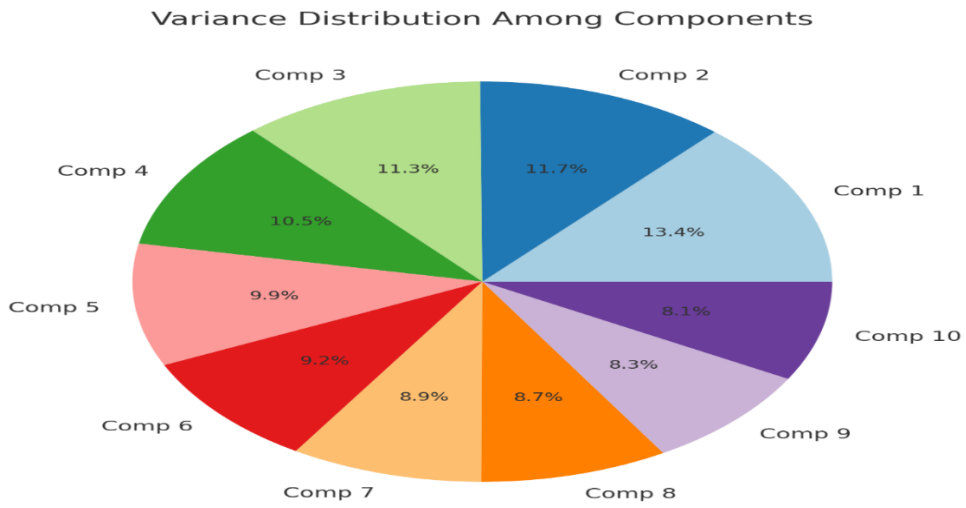

Fig 5: Variance Distribution among Components

Each factor was named by using a name that reflects all the variables. And where there was a difficulty in picking a suitable name, the variable(s) that had the highest factor loadings among all the variables that loaded onto a factor was used in naming that factor. The ten factor groupings are reported as follows. A total of three (3) variables loaded onto factor 1 as shown in Figure 6, which indicates that these variables are identified as the topmost factors for the influence of cross-cultural dynamics on the effectiveness of cross-functional teamwork in construction projects. This factor loads 'Flexibility and Adaptability' Social Interaction Norms' and Time Orientation. Therefore, they are collectively called 'Flexibility and Adaptability' and accounts for 7.68 percent of the variance. A total of three (3) variables loaded onto Factor 2 as shown in Figure 6. This factor loads 'Team Diversity Management', 'Workplace Inclusivity' and 'Team Cohesion. They were collectively named 'Team Diversity Management' and accounts for 6.67 percent of the variance.

Three (3) variables loaded onto Factor 3 as shown in Figure 6. This factor loads 'Respect for Cultural Traditions', 'attitudes toward authority' and 'cultural sensitivity training. They were collectively named 'Respect for Cultural Traditions account for 75.2 percent of the variance. Two (2) variables were loaded onto Factor 4 as shown in Figure 6. This factor loads 'Conflict Resolution Strategies' and 'Cultural Awareness'. Therefore, they were collectively called 'Conflict Resolution Strategies' and account for 6.03 percent of the variance. Three (3) variables loaded onto Factor 5 as shown in Figure 6 and Figure 7. This factor loads 'Feedback Mechanisms', 'Cultural Integration in Project Management' and 'Perception of Roles and Responsibilities. They were collectively named 'Feedback Mechanisms' and accounts for 5.67 percent of the variance.

A total of two (2) variables loaded onto factor 6 as shown in Figure 6. This factor loads 'Decision-Making Processes' and 'Power Distance. Therefore, they are collectively called 'Decision-Making Processes' and accounts for 5.26 percent of the variance. A total of two (2) variables loaded onto factor 7 as shown in Figure 7. This factor loads 'Language Barriers' and 'Shared Goals and Objectives. Therefore, they are collectively called 'Language Barriers' and accounts for 5.08 percent of the variance. Two (2) variables loaded onto factor 8 as shown in Figure 7. This factor loads 'Communication Styles' and 'Leadership Adaptability. Therefore, they are collectively called 'Communication Styles' and accounts for 4.97 percent of the variance. One (1) variable loaded onto factor 9 as shown in Figure 7. This factor loads 'Cross-Cultural Leadership Competence'. Therefore, it

is called 'Cross-Cultural Leadership Competence' and accounts for 4.73 percent of the variance. One (1) variable loaded onto factor 10 as shown in Figure 6. This factor loads 'Trust Building'. Therefore, it is called 'Trust Building' and accounts for 4.61 percent of the variance.

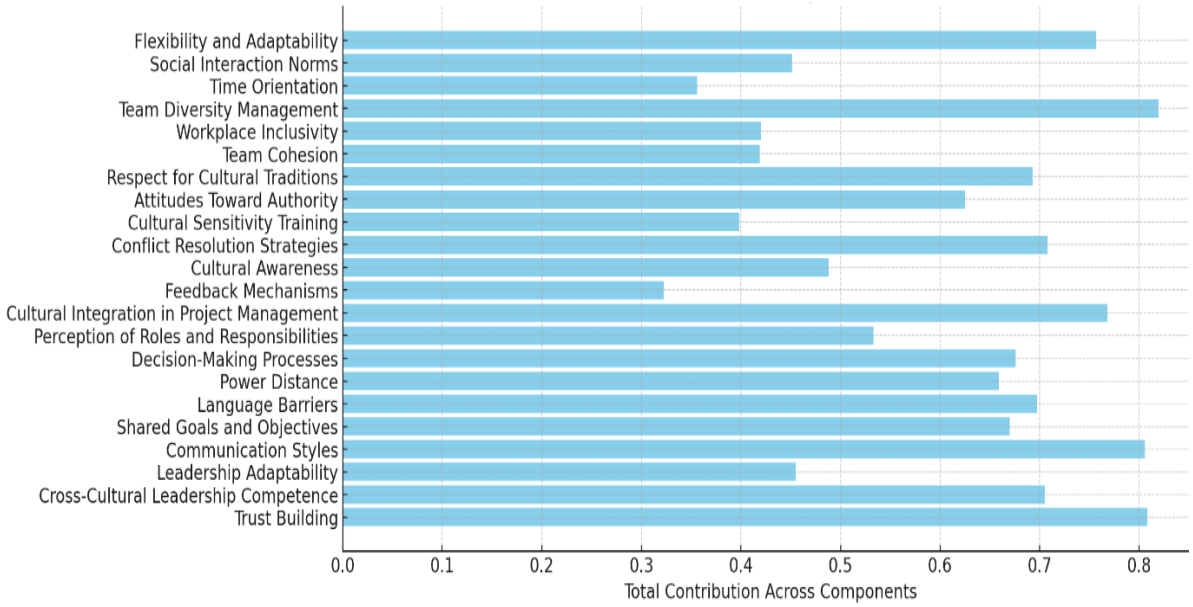

Fig. 6: Factor Contribution to Component

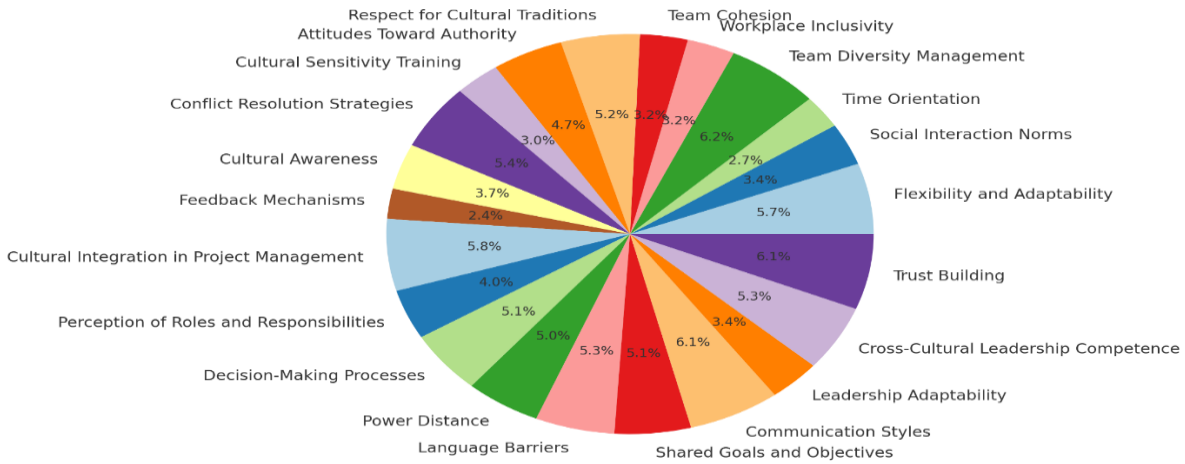

Fig. 7: Factor Contribution to Component

5.0 Discussion

The significance of cross-cultural interactions within construction industry teams has grown in today's globalized environment. The effectiveness of these interactions within cross-functional teams is influenced by various factors, each contributing to team collaboration and performance. One critical factor is the perception of roles and responsibilities, which highlights cultural differences in role interpretation within teams. According to Leontev (2019), clear communication and an appreciation of diverse cultural perspectives are essential for strengthening collaboration, especially in multicultural settings where misunderstandings about roles may lead to inefficiencies and conflict. Leadership adaptability is another key element, as leaders who embrace cultural diversity tend to be more effective in managing cross-functional teams. Harush *et al.* (2018) suggest that leaders demonstrating flexibility and cultural awareness

create an inclusive environment that enhances team performance. Such adaptability enables leaders to address the challenges associated with diverse team dynamics and respond effectively to complex situations. Additionally, cultural integration in project management is crucial, as embedding cultural awareness into project practices improves teamwork. Bhatti *et al.* (2018) argue that recognizing and valuing cultural differences fosters a cohesive working environment, leading to enhanced collaboration and innovation. However, language barriers introduce complexities, as linguistic differences can hinder communication and project success.
From the factor analysis conducted, ten key factors emerged.

Cluster Factor 1, labeled "Flexibility and Adaptability," comprises three variables and accounts for 7.68% of the variance. Cross-cultural dynamics play an essential role in shaping cross - functional teamwork effectiveness in construction projects. Factors such as flexibility, adaptability, social interaction norms, and time orientation are particularly influential. Zhou *et al.* (2022) emphasize that flexibility and adaptability are crucial for enabling team members from diverse cultural backgrounds to manage differing expectations and work styles within construction projects' complex and unpredictable environments.

Cluster Factor 2, "Team Diversity Management," includes three variables and accounts for 6.67% of the variance. Jones *et al*. (2021) highlight that cross-cultural dynamics significantly impact teamwork effectiveness in construction projects, particularly through team diversity management, workplace inclusivity, and team cohesion. They argue that effectively managed diverse teams enhance innovation and problem-solving capabilities, leading to improved project outcomes. "Respect for Cultural Traditions" forms Cluster Factor 3, consisting of three variables and accounting for 6.45% of the variance. Cheung *et al*. (2012) note that respect for cultural traditions fosters collaboration and mutual understanding among team members, which is essential for project success. Moradi et al. (2020) further indicate that variations in attitudes toward authority influence communication and decision-making, emphasizing the need to acknowledge hierarchical differences.

Cluster Factor 4, "Conflict Resolution Strategies," comprises two variables. Mach and Baruch (2015) assert that conflict resolution strategies and cultural awareness are crucial for enhancing cross-functional teamwork effectiveness in construction projects. They argue that effective conflict resolution minimizes misunderstandings and fosters collaboration among culturally diverse teams. Feitosa *et al.* (2018) further emphasize that cultural awareness strengthens communication and trust, essential components of team cohesion and performance. Cluster Factor 5, "Feedback Mechanisms," includes three variables: feedback mechanisms, cultural integration in project management, and perception of roles and responsibilities. Shen *et al*. (2015) highlight that feedback mechanisms significantly influence teamwork effectiveness by promoting psychological safety, which encourages open discussions about challenges an essential aspect of collaboration in diverse teams. Afful and Addo (2024) stress that cultural integration in project management improves understanding among team members from different backgrounds, thereby enhancing communication and cooperation. Udebuana (2019) also emphasizes that alignment with cultural sensitivities facilitates the achievement of shared objectives and improves project outcomes.
Cluster Factor 6, "Decision-Making Processes," consists of two variables and accounts for 5.26% of the variance. Rajenthiran *et al*. (2020) note that cross-cultural dynamics significantly influence decision-making processes and power distance in construction projects. Effective

cross-cultural interactions play a vital role in negotiations and problem-solving, although cultural differences can create mis-understandings that hinder team performance. Cluster Factor 7, "Language Barriers," accounts for 5.08% of the variance and comprises two variables. Language barriers greatly impact cross-functional teamwork effectiveness by hindering communication and misalignment in shared goals and objectives. Li *et al*. (2018) highlight that clear communication is essential for knowledge sharing and coordination among team members from diverse backgrounds, ultimately improving project success.

Cluster Factor 8, "Communication Styles," includes two variables and accounts for 4.97% of the variance. Effective communication fosters collaboration among culturally diverse teams, as cultural values influence teamwork practices. Chen *et al*. (2020) argue that cross-cultural dynamics shape communication styles and leadership adaptability in construction projects. Ellis *et al*. (2023) emphasize that a constructive communication environment allows team members to voice ideas and concerns, enhancing cohesion and performance. Cluster Factor 9, "Cross-Cultural Leadership Competence," includes one variable and accounts for 4.73% of the total variance. Leaders with high cultural intelligence (CQ) are better equipped to resolve conflicts arising from diverse values and perspectives, promoting a collaborative environment that enhances team performance. Groves and Feyerherm (2011) assert that cross-cultural leadership competence is a crucial factor in cross-functional teamwork effectiveness within construction projects. Jones *et al*. (2020) highlight that culturally competent leaders create psychological safety, encouraging team members to engage in decision-making, which is critical for innovation and problem-solving. Finally, Cluster Factor 10, "Trust Building," also includes one variable. Uusitalo *et al*. (2019) argue that trust enhances working relationships, facilitating information sharing and conflict resolution, ultimately improving project performance. Zuppa *et al*. (2016) note that the construction industry relies on collaboration among various stakeholders, making trust-building essential for achieving project objectives.

6.0 Conclusions

The effectiveness of teamwork in the construction industry is significantly influenced by cross-cultural interactions, particularly in emerging economies, where leadership adaptability, cultural integration, and role perception are crucial factors. Factor analysis identified ten key elements that shape cross-functional teamwork effectiveness, including flexibility, adaptability, communication styles, feedback mechanisms, conflict resolution strategies, and language barriers, each of which uniquely impacts collaboration, decision-making, and project success. Leaders with high cultural intelligence (CQ) and adaptability foster an inclusive and efficient team environment, while respect for cultural traditions and hierarchical structures plays a critical role in effective communication and decision-making. Language differences present challenges in knowledge sharing and coordination; however, implementing effective feedback mechanisms and culturally aware communication styles can enhance collaboration and reduce misunderstandings. Trust-building is essential for fostering strong professional relationships, facilitating conflict resolution, and improving project outcomes, while structured conflict resolution strategies can mitigate cultural misunderstandings and promote teamwork cohesion. The study is limited to Lagos, Nigeria, and does not encompass broader perspectives from other cities or countries, necessitating further research into cross-cultural teamwork dynamics in other construction industry settings globally.

To improve teamwork effectiveness, organizations should implement training programs to enhance cultural awareness,

adaptability, and leadership skills among construction professionals. Employing multilingual communication tools and interpreters can address language barriers, while promoting open dialogue and feedback mechanisms strengthens collaboration. Leadership development initiatives should prioritize cultural intelligence (CQ) training to foster inclusive and effective leadership. Cultural sensitivity should be integrated into project management frameworks to enhance productivity and cooperation, with policies that encourage diversity and inclusivity. Future research should extend beyond Lagos to other geographical regions and focus on developing frameworks that facilitate knowledge-sharing, collaboration, and problem-solving in multicultural construction teams.

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