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# Collaborative Processes: A Route Towards the Success of Construction Projects

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**Purpose:** Effective collaboration plays a crucial role in ensuring the accomplishment of construction projects, and a clearly outlined collaborative approach stands as a fundamental component of a thriving construction partnership. While both the consultant and contractor hold vital positions within the construction domain, the manner in which their interactions influence undertakings within Nigeria's construction sector remains inadequately explored. Consequently, this research endeavors to appraise the impact of collaboration on the triumphant execution of construction projects.

**Methodology:** A quantitative investigation was executed, encompassing the gathering of primary data through meticulously constructed questionnaires. These surveys inquired about collaborative methodologies, project success factors intertwined with collaboration, and the ramifications of consultant-contractor collaboration on project achievement. Scrutiny of data amassed from 135 consulting and construction enterprises situated in Lagos, Nigeria, unfolded via mechanisms such as frequency distribution, mean score calculations, analysis of variance (ANOVA), and multiple regression analyses.

**Results:** The study's outcomes unveiled that both consultants and contractors participate in collaborative procedures, with their involvements primarily encompassing well-defined roles and obligations, dissemination of information, cooperative efforts, harmonized communication, and the establishment of collaborative governance structures. Furthermore, the findings illuminated that effective coordination and a resolute team orientation constitute the principal collaborative factors fostering project success. Ultimately, the research underscores that a robust and proficient collaboration between consultants and contractors significantly influences the triumph of construction endeavors, as evidenced by an R-squared value of 0.7403.

**Contribution to policy and practice:** This study's implication resonates in its call for continual integration and implementation of diverse collaborative levels and procedures by project stakeholders, thereby facilitating successful project fruition and laying the groundwork for the assimilation of digital collaborative frameworks within Nigeria's construction landscape.

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## 1. Introduction

Collaboration stands as a vital element in the construction sector, ensuring the timely and budget-conscious completion of projects (Abdull-Rahman et al., 2014; Jones, 2018). It embodies a partnership between multiple entities to collectively tackle challenges and achieve outcomes. However, collaboration's interpretation varies, reflecting the perspective of the speaker or writer. Regardless of its form or characteristics, collaboration entails a mutual agreement between partners who communicate and network to solve problems (Lai, 2011; Child & Shaw, 2016). Effective collaboration hinges on commitment to shared relationships, responsibilities, and goals, necessitating meticulous planning and clearly defined communication channels. A successful collaborative process involves information exchange, resource sharing, comprehensive member engagement for mutual benefit (Greer, 2017), and the formulation of a robust process for positive change (Thompson, 2016), encompassing norms, mutuality, governance, and administration.

Despite the construction industry's significant contribution to economic development through diverse entities' involvement, it grapples with collaboration challenges (Lofgren, 2009; Ahmed, 2019). Difficulties in achieving collaborative goals may stem from clients' modest satisfaction with collaborative projects (Gadde & Dubois, 2010). Moreover, the competitive nature of the construction sector, coupled with its complexity, has hindered effective communication and information transfer (Magba, Cowden & Karodia, 2014), resulting in negative consequences like project delays, information gaps, uneven resource allocation, financial losses, and rework, adversely impacting the entire construction domain (McDonald, 2014). Norberg-Johnson's (2015) assertion that collaboration remains a relatively novel project delivery approach underscores the ongoing debate about its value. However, introducing collaboration in construction fosters teamwork and enhances communication among project stakeholders (Abdull-Rahman et al., 2014).

Furthermore, collaboration facilitates successful project outcomes, fostering enduring relationships for future endeavors (Norberg-Johnson, 2015; Pal, Wang & Liang, 2017). Despite its significance, studies suggest that collaboration adoption and engagement among project participants remain suboptimal (Ahmed, 2019), indicating a considerable portion of construction industry stakeholders are not fully embracing all levels and facets of collaboration. Notably, consultants and contractors play pivotal roles in project success, yet limited research explores their interdependence in Nigeria's construction landscape. Consequently, assessing the impact of consultant-contractor collaboration on construction project success in Nigeria becomes imperative.

## 2. Literature Review

### 2.1. Theoretical Background: Exploring the Role of Collaboration in Enhancing Construction Project Success

The construction industry plays a pivotal role in economic development and infrastructure enhancement. A successful construction project hinges on effective collaboration among various stakeholders. Collaboration, often characterized as a dynamic and multifaceted process, holds the potential to significantly influence project outcomes. This theoretical background delves into the conceptual underpinnings of collaboration in the context of construction projects, elucidating its theoretical foundations, dimensions, and the implications of its successful integration.

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Collaboration, as an overarching concept, finds its roots in various theoretical frameworks. One of the prominent frameworks that underpins collaboration is social exchange theory. This theory posits that individuals engage in cooperative endeavors when they perceive the benefits of collaboration outweighing the costs (Emerson, 1976). Applied to construction projects, stakeholders, including contractors and consultants, engage in collaborative efforts driven by the anticipation of shared benefits, effective problem-solving, and mutual gains. This framework elucidates the rational motivations underlying collaboration in the construction domain.

Moreover, the resource dependence theory accentuates the notion that organizations collaborate to access critical resources that are otherwise beyond their immediate reach (Pfeffer & Salancik, 1978). In construction, stakeholders pool their expertise, information, and resources to navigate the complex and resource-intensive nature of projects. Consultants and contractors, being integral actors, collaborate to optimize resource allocation, minimize uncertainties, and augment project efficiency.

Collaboration in construction projects encompasses multifaceted dimensions that collectively shape project outcomes. The identification of these dimensions provides a comprehensive framework for understanding collaboration's impact. One crucial dimension is communication. Effective communication channels facilitate the exchange of information, ideas, and insights among stakeholders. Collaboration thrives on transparent and open communication, enabling informed decision-making and streamlined project execution (Greer, 2017).

Another critical dimension is cooperation and coordination. Collaborative efforts require stakeholders to harmonize their actions, tasks, and responsibilities to achieve project goals. This dimension is aligned with the concept of inter-organizational coordination, where stakeholders collectively manage interdependencies to ensure project progress (Ring & Van de Ven, 1992). Collaboration's success hinges on the extent to which stakeholders collaborate in coordinating their efforts and aligning their objectives.

Furthermore, collaborative governance structures provide a framework for decision-making, conflict resolution, and the establishment of norms and rules (Thomson, 2001). This dimension highlights the necessity of structured collaboration, where stakeholders collectively define roles, responsibilities, and mechanisms for resolving disputes. In the construction context, collaborative governance ensures that stakeholders remain aligned and focused on project success.

Collaboration's impact on project success is far-reaching and encompasses diverse implications. Effective collaboration fosters a shared sense of ownership, accountability, and responsibility among stakeholders. This collective commitment is aligned with the concept of social identity theory, wherein individuals align their identities with a group, resulting in increased cooperation and coordinated efforts (Tajfel & Turner, 1986). In construction projects, this translates to stakeholders working cohesively towards common goals, thereby enhancing project efficiency and success.

Collaboration also facilitates knowledge transfer and learning. The exchange of insights, expertise, and best practices among stakeholders leads to enhanced problem-solving capabilities and innovative solutions (Lai, 2011). This knowledge sharing aligns with the theory of absorptive capacity, wherein organizations enhance their capacity to assimilate, adapt, and apply external knowledge (Cohen & Levinthal, 1990). In the context of construction,

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collaborative knowledge transfer contributes to improved project performance and adaptability.

Thus, collaboration in construction projects is rooted in established theoretical frameworks such as social exchange theory and resource dependence theory. Its multidimensional nature encompasses communication, cooperation, coordination, and collaborative governance. The implications of effective collaboration extend to shared ownership, knowledge transfer, and adaptive learning. Consultants and contractors, as key stakeholders, play a central role in the collaborative ecosystem that drives construction project success. By embracing collaboration's theoretical foundations and dimensions, stakeholders can cultivate an environment conducive to innovation, efficiency, and sustainable project outcomes in the dynamic realm of construction.

### 2.2. Collaboration in Construction

The construction industry, a crucial segment of the economy, involves a diverse array of stakeholders. This sector relies on collaboration among individuals and organizations to achieve favorable project outcomes. Collaboration is a multifaceted and enduring relationship, with its interpretation varying across studies. Afsarmanesh and Camarihna-Matos (2008) view it as a process where participants share resources and information to collectively attain a common goal. Lai (2011) defines it as the mutual engagement of participants working together to solve problems. Patel, Pettitt, and Wilson (2012) see it as a process where multiple individuals cooperate to accomplish tasks. Sanders and Costain (2014) consider it the identification of shared objectives leading people to collaborate. Collaboration entails shared effort by a group, enhancing overall project efficiency (Norberg-Johnson, 2015).

Frey, Jill, Lohmeier, and Nona (2006) categorize collaboration into networking, cooperating, connecting, merging, unifying, coordination, and coalition. Ingirige and Sexton (2006) assert that cooperation within project teams increases over time, emphasizing the significance of long-term partnerships for achieving objectives and sustainable advantages. Collaboration processes encompass five dimensions: governance, administration and autonomy, mutuality, trust, and reciprocity. A structured collaborative process is essential, offering a temporary governance structure (Greer, 2017). Collaboration involves shared norms and mutually beneficial interactions (Thomson, 2001). Mutuality involves exchanging individual interests for collective ones, vital for organizations aiming to achieve shared goals. Chen and Graddy (2005) view mutuality as acquiring resources from other organizations for collective functioning. Governance represents a collaborative process where organizations with distinct interests jointly solve problems. Administration involves cooperative management of parties, unifying collective interests. Autonomy lets parties independently achieve outcomes while collaboratively working. Social and capital norms guide expected behavior.

The impact of collaboration on project success differs from other governance forms (Eriksson & Westerberg, 2011). Awodele and Ogunsemi (2010) highlight project partnering's role in enhancing quality and reforming traditional procurement. Collaboration embodies shared goals, joint responsibility, and project-level completion, key factors in project success (Patel et al., 2012). Collaboration and communication are pivotal for achieving project objectives (De-Saram and Ahmed, 2001). Success factors are variables enhancing project success (Westerveld, 2003). Lofgren (2009) links collaboration to construction project performance and efficiency. Chen and Chen (2007) identify efficient coordination, dedicated teams, commitment to quality, partnership formation at design stages, flexibility, productive conflict resolution, and long-term

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commitment as significant success factors. Influencing these factors at the right time enhances project success (Savolainen, Ahonen & Richardson, 2012).

## 3. Research Methodology

The research design employed in this study was of a quantitative nature, and primary data were gathered through a survey conducted among registered construction and consulting firms situated in Lagos State, Nigeria. The total count of such entities was two hundred and forty-nine (249), from which a sample size of 135 was derived employing the Yamane formula, incorporating a 10% margin of error (MOE). A meticulously structured questionnaire, comprising three distinct sections, was disseminated to these consulting and construction firms. Section 1 inquired about the respondents' background information; section 2 delved into the various collaborative processes, while section 3 explored success factors pertaining to collaboration. These queries were rated using a 5-point Likert scale, wherein a score of 1 indicated "very low," and a score of 5 denoted "very high." The collected data underwent analysis involving frequency distribution and percentage calculations, mean item score (MIS) computation, analysis of variance (ANOVA), and regression analysis. Within the framework of regression analysis, the independent variable (X) was used to predict the dependent variable (Y). This methodology was employed to scrutinize the influence of collaborative processes among project participants on project success. Here, collaborative processes were treated as the independent variable, while the dependent variable was represented by the collaborative success factors.

## 4. Results and Discussion

Out of the one hundred and two (135) questionnaires distributed, 105 was retrieved and suitable for analysis. The questionnaire analyzed represented 78% healthy response rate. The result showed that 62% of the firms are into contracting businesses while 38% into consulting businesses in Lagos, Nigeria. Also, the respondents have an average of 6 years working experience. 39% of the respondents are quantity surveyors. 16% are architects, 13% are civil engineers, 11% are builders, 9% are structural engineers while 6% are electrical engineers and lastly 6% of the respondents are mechanical engineers in both consulting and contracting firms.

### 4.1. Level of Involvement in Collaborative Process

Table 1 illustrates the extent to which collaborative processes engage various participants within the project. The outcomes unveiled that both consultants and contractors actively partake in all facets of collaborative processes. While prior research predominantly outlined collaboration processes encompassing norms, mutual understanding, governance, and administrative dimensions, this contemporary investigation expands the purview of collaborative processes to encompass communication and the integration of technological tools. The analysis disclosed that the collaborative interplay, particularly embraced by contractors and consultants, prominently encompasses delineating distinct responsibilities, sharing crucial information, fostering cooperation and harmonized coordination, augmenting communication effectiveness, and instituting collaborative governance structures. This aligns harmoniously with the conclusions drawn by Paisley (2015) emphasizing the significance of information sharing, as well as corroborates the insights of Annett & Jervin (2014), which underscore cooperation as a vital inter-organizational mechanism for troubleshooting within organizational frameworks.

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***Table 1.*** *Level of Involvement in Collaborative Processes.*

| Collaborative Processes | Mean score | Rank |
|---|---|---|
| Clear roles and responsibility | 3.75 | 1 |
| Information sharing | 3.75 | 2 |
| Cooperation and coordination | 3.71 | 3 |
| Improved communication | 3.68 | 4 |
| Collaborative governance | 3.65 | 5 |
| Interest unifying Process | 3.59 | 6 |
| Building mutual relationships | 3.52 | 7 |
| Joint decision making | 3.51 | 8 |
| Use of technologies e.g. BIM | 3.42 | 9 |
| Collaborative administration | 3.41 | 10 |
| Building social capital norms | 3.34 | 11 |

Success factors of project based on effective collaboration was also examined. The results on Table 2 revealed that all the factors highlighted contributed to the success of project though, efficient coordination and dedicated team contributed more to project success are the success factors that contribute most to project success based on effective collaboration. The finding of this current study slightly support to the finding Abdull-Rahman, et al. (2014) which assesses the importance of collaboration in construction and found out that encourage teamwork, improve cooperation, stimulated information sharing and improve quality are the factors that leads to successful collaboration.

***Table 2.*** *Success Factors of Project based on Effective Collaboration.*

| Success factors | Mean score | Ranking |
|---|---|---|
| Efficient coordination | 4.44 | 1 |
| Dedicated team | 4.33 | 2 |
| Commitment to Quality | 4.19 | 3 |
| Partnership formation at design stage | 4.13 | 4 |
| Commitment to Win-Win Attitude | 4.12 | 5 |
| Flexibility to change | 4.03 | 6 |
| Productive Conflict Resolution Strategy | 3.95 | 7 |
| Long term commitment | 3.85 | 8 |

### 4.2. Impact of Collaborative Processes between Project Actors on Project Success

The analysis of variance (ANOVA) was used to determine a relationship between collaborative process and project success. The result of ANOVA on Table 3 showed that the P value = 0.001, <0.05 indicates a significant relationship between collaborative processes and the success of construction projects in Nigeria.

***Table 3.*** *Relationship between Collaborative Processes and Project Success.*

| Model | | *df* | *SS* | *MS* | *F* | *P-value* |
|---|---|---|---|---|---|---|
| 1 | Regression | 1 | 26.064 | 26.064 | 22.808 | 0.001 |
| | Residual | 8 | 9.142 | 1.143 | | |
| | Total | 9 | 35.206 | | | |

From the values gotten from the analysis on Table 4, the value of $R^2$ is 0.7403 which means that 74% of the total variance in the impact of collaboration processes on success factors of a successful project has been explained. This implies that the data shows strong positive impact of collaboration processes between project actors on project success. This is in agreement with the assertion of Eriksson and Nilsson (2008) which stated that collaborative approach was

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responsible for the success of construction projects in terms of the completion to time and cost. Also, this finding corroborated the finding of Ahmad, Saleh and Dash (2018) that collaboration among key stakeholders has positive impact on the success of construction projects.

***Table 4.*** *Regression Coefficients for Collaborative Processes and Project Success.*

| | Multiple R | R square | Adjusted R square | Standard error | Sig. |
|---|---|---|---|---|---|
| Impact | 0.860 | 0.740 | 0.708 | 1.069 | 0.740 |

Note: Sig = Significance5.

## Conclusion

Demonstrated by empirical evidence, effective and streamlined collaboration has been validated as a catalyst for enhancing the outcomes of construction projects, thereby ushering in success. This ongoing investigation delves even deeper, elucidating the intricate dynamics between consultants and contractors and their profound impact on the triumph of projects within Nigeria's context. The study's deliberate focus rests upon these two pivotal actors – contractors and consultants – who wield significant influence within the construction realm. An exploration of findings extracted from the empirical results lays bare the active participation of project stakeholders across the entire spectrum of collaborative processes. Principally, this engagement is concentrated in delineating unambiguous roles and responsibilities, the exchange of pertinent information, cooperative endeavors, harmonized coordination, amplified communication, and the establishment of collaborative governance structures.

Furthermore, the study has discerned that the bedrock of collaborative success in construction projects resides in the realms of well-coordinated actions, teams wholeheartedly devoted to their tasks, and an unwavering commitment to ensuring quality outcomes. Conclusively, it emerges from the analysis that the collaborative interplay among project stakeholders stands as a positive harbinger, effectively catalyzing the favorable culmination of construction projects. It is therefore strongly recommended that these project stakeholders cultivate an enduring disposition to embrace and perpetuate the comprehensive spectrum of collaborative facets throughout the lifecycle of construction endeavors, thereby creating a conducive milieu for the assimilation of sustainable practices. To facilitate this transformative process, it is advocated that professional institutes and organizations associated with construction project collaboration undertake proactive initiatives such as workshops, seminars, conferences, and analogous platforms. The aim of these efforts would be to enlighten industry professionals about the myriad advantages inherent in collaborative practices and to embrace the adoption of digital collaboration frameworks.

Nonetheless, the present study bears certain limitations, confined in its scope to the evaluation of the symbiotic rapport between contractors and consultants. An extended inquiry is warranted to delve into the collaborative dynamics among other essential project stakeholders and teams, further dissecting how their concerted endeavors shape project success in diverse geographical regions across Nigeria.

## Recommendations

Based on the study findings, the study recommended the following:

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**Promote Comprehensive Collaboration:** Recognizing that effective collaboration is a catalyst for project success, it is imperative for project stakeholders, particularly contractors and consultants, to wholeheartedly embrace and perpetuate the entire spectrum of collaborative processes. This should encompass unambiguous role definition, information sharing, cooperation, coordination, communication enhancement, and the establishment of collaborative governance structures. By actively engaging in these facets, stakeholders can create a solid foundation for successful project outcomes.

**Cultivate Commitment to Quality and Coordination:** The study underscores the significance of well-coordinated actions, dedicated teams, and an unwavering commitment to quality in achieving collaborative success. Stakeholders should prioritize these aspects throughout the project lifecycle. This involves fostering a culture of teamwork, accountability, and excellence, which will contribute to enhanced project outcomes.

**Facilitate Knowledge Dissemination:** Professional institutes and organizations linked with construction project collaboration should take proactive measures such as organizing workshops, seminars, conferences, and similar platforms. These initiatives will serve to enlighten industry professionals about the benefits of collaborative practices, encourage knowledge sharing, and promote the adoption of digital collaboration tools. This will help bridge any gaps in understanding and facilitate the integration of innovative collaborative frameworks.

**Expand Collaborative Research:** While the current study focuses on the interplay between contractors and consultants, there is a clear need for further investigation into the collaborative dynamics among other vital project stakeholders and teams. A broader inquiry should be conducted to explore how the collective efforts of various stakeholders influence project success across different regions in Nigeria. This expanded research will provide a more comprehensive understanding of collaboration's impact and effectiveness.

**Embrace Sustainable Practices:** In line with the study's emphasis on collaboration as a catalyst for success, stakeholders should recognize the potential for collaborative efforts to drive the assimilation of sustainable practices in construction projects. By integrating sustainability considerations into collaborative processes, projects can achieve long-term environmental, social, and economic benefits.

**Mitigate Study Limitations:** While the present study sheds light on the contractor-consultant relationship, acknowledging its limitations is crucial. Future research endeavors should aim to broaden the scope to encompass diverse project stakeholders and geographical regions within Nigeria. By addressing these limitations, a more holistic understanding of collaborative dynamics and their influence on project success can be achieved.

In essence, the recommendations emphasize fostering a collaborative mindset, emphasizing quality and coordination, facilitating knowledge exchange, expanding research horizons, promoting sustainability, and acknowledging and mitigating the limitations of the current study. These actions collectively contribute to enhancing collaboration and, subsequently, the success of construction projects in Nigeria.

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