Anchor University Journal of Science and Technology (AUJST)
A publication of the Faculty of Science and Science Education, Anchor University Lagos
URL: journal.aul.edu.ng
Vol. 1 No 2, December 2020, Pp. 1 - 16
ISSN: 2736-0059 (Print); 2736-0067 (Online)

Engendering Cohesion among Construction Project Team Members (CPTMs): Factors to Consider

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Submitted 28 July, 2020
Accepted 8 September, 2020

Competing Interests: The authors declare no competing interests.

ABSTRACT

Background: Despite the importance of cohesion in all human endeavours and especially among CPTMs, the specific factors that will engender cohesion among CPTM have rarely been researched.
Objectives: This study seeks to identify factors that engender cohesion among construction project team members (CPTMs) to improve on construction project performance and contribute to the construction performance literature.
Methods: The study adopted an online survey by the use of a questionnaire to elicit information from construction professionals involved in construction projects in the six geopolitical zones of Nigeria. The importance of the factors identified in the study was analysed using the Relative Importance Index (RII). Likewise, Exploratory Factor Analysis (EFA) was used to group the 28 identified factors into parsimonious groups for decision-making.
Results: The results of the RII show that for the cohesion of CPTMs in Nigeria, the top-ranking factors are: commitment to the project objectives by team-members, team members; competence; project leadership; clarity of project goal; and objectives and adherence to professional ethics by team members with RII values of 0.91, 0.91, 0.91, 0.90 and 0.90, respectively. The conducted EFA reduced the 28 factors into six components, namely: shared identity', 'roles and responsibility of team members', 'social entity', 'respect and trust', 'team chemistry' and 'team size'. This study empirically identified and classified factors that engender cohesion among CPTMs which will be of significance to the construction industry practitioners and help improve construction project performance. The study is crucial as it collates analyses and compares the factors that engender cohesion among CPTMs from professionals practicing in four different construction professional firms, thereby providing a more reliable conjecture of opinions.
Conclusions: The findings will assist in significantly improving the performance of construction projects globally if the identified factors are carefully considered.

Keywords: Cohesion, CPTMs, performance improvement, teamwork, Nigeria

INTRODUCTION

Organizations are continuously adopting a 'teamwork' approach to achieve competitiveness, given that teamwork has been widely hailed to improve performance as against an individual work-based approach (Tommy, 2019). It is noted that teamwork is a multipurpose vehicle for problem-solving in organizations and groups where members from diverse backgrounds work together in the achievement of organizational goals. It is credited that teamwork creates synergy, camaraderie among team members, creativity, and knowledge generation. This increases the morale of the team member and improves productivity (Rezvani *et al.,* 2018; Salas, *et al.,* 2005; Troth, *et al.*, 2012).

However, the assumption is that the benefits of teamwork can only be enhanced if the team is cohesive (Salas *et al.,* 2015). A work team is composed of two or more

individuals who are meant to be mutually committed, share the organization's goals, and display collegial understanding. The degree of this commitment to one other, as well as the tasks, will determine the strength of cohesion within the team (Carron *et al.,* 2002, Tommy, 2019). Studies have found a positive relationship between cohesion and team performance. As reported by Tommy (2019), cohesive teams produce better results, and teams who produce better results work cohesively. However, many intrinsic and extrinsic factors have deterred the emergence of cohesive teams. In light of this, Malonea and Lorimer (2020) suggest that for a team to achieve its set objectives, team members will need to share their knowledge for proper coordination of their actions. This present study, therefore, aims to identify the factors that will contribute to increasing cohesion levels among team members within the construction industry.

The construction industry, an important driver of economic and social activities and the sector responsible for the provision of housing and all infrastructural needs that other sectors of the economy rely on for their development is inundated with various non-performance concerns such as schedule delays and cost overruns among others (Ameh *et al.,* 2010; Yap and Shavarebi, 2019). Construction projects across the globe and Nigeria, in particular, have performed poorly and rarely meet the triple project constraints of time, budget, and quality requirements of the project performance metric (Ameh *et al.,* 2010). The continuous increase in construction clients' satisfaction requirements, advancement in technology, changing organizational cultures, and an increase in competitiveness have warranted the need to improve the performance of construction projects. Poor project performance, typified by prolonged construction time, cost overruns, and low-quality facilities may no longer be acceptable in construction projects in the Fourth Industrial Revolution.

A major cause of poor performance in the construction project delivery process is the fragmentation of the industry. Fragmentation leads to individuality and lack of cohesion among the construction professionals otherwise known as construction project team members (CPTM) (Baiden *et al.,* 2006; Egan, 2002). A typical construction project is composed of independent multi-disciplinary CPTM who are appointed by the client to act as project consultants and contractors. They are to be responsible for the design and actual execution of construction projects. Egan (2002) noted that this process leads to situations where construction projects tend to be dogged by adversarial relationships and the lack of collaboration among CPTMs. This lack of collaboration and cohesion itself leads to inefficiency and invariably to poor performance outcomes in the construction industry (Egan, 1998; 2002). However, despite the importance of cohesion in all human endeavours and especially among CPTMs, the specific factors that will engender cohesion among CPTM have rarely been researched. This study, therefore, seeks to identify critical factors that engender cohesion among CPTMs to improve the construction delivery process and project outcomes.

Team Cohesion

Giving the importance of cohesion in team dynamics, researchers have offered a wide range of definitions for the phenomenon. A common feature of these definitions is that cohesion encompasses relationships as well as unity and common purpose within groups. In the pioneering study on cohesion, Festinger *et al.,* (1950) described cohesion as the stimuli that impose obligations on 'team members' to remain in the group. This definition views cohesion as the force that connects members to a group. Carron *et al.,* (1998) identified cohesion as a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs. The definitions illustrate the essence of coherence within a group (Carron *et al.*, 1985). According to Kim *et al.,* (2016), this is a critical construct for team success. Engleberg and Wynn (2017) found that members of a cohesive team place more emphasis on the collective success of the team, rather than individual self-accomplishments, and thus outperformed those of less cohesive teams.

Studies have also established that organizational goals and performance improvement can be achieved through cohesive work teams that help to develops collective efficacy and satisfaction among members. It is further noted that the degree of cohesiveness in work teams help members to be more satisfied and less anxious than in non-cohesive groups. Consequently, there is a stimulation of prompt communication, good interpersonal relationship, conformity with group norms and achievement of better performance (Lepine *et al.,* 2008; Mullen and Copper, 1994; Wildman *et al*., 2012; Sanner and Bunderson, 2015).

Factors Engendering Cohesion among CPTMs

As earlier noted, cohesion is an important construct in organizations where members work interdependently to achieve the organizational objectives. It builds solidarity and loyalty among team members. Engleberg and Wynn (2017) observed that while some groups attain cohesion with little or no effort, either by chance or partly because of how they were composed, others find it difficult to attain cohesion.

This section addresses some of the factors that have been identified in the literature to influence team cohesion.

Communication

Communication has been identified as one of the most important aspects of team integration (Baiden *et al*., 2006; El-Gohary & El-Diraby, 2010). According to Baiden *et al*., (2006), communication is a social skill that involves interactions between people to convey opinions and facts in the bid to generate ideas and solve operational problems. Dainty *et al*., (2006) defined communication as a transactional process that transfers information to bridge gaps. They further noted that the diversity of stakeholders involved in construction operations makes communication important among CPTMs. Therefore, to engender cohesion among CPTMs, communication among team members is very important. Emmitt and Gorse (2007) stated that the form of interactions among team members determines the strength of the subsisting relationship and the effectiveness of the process. For the effectiveness of construction operations, consideration should be given to the two forms of communication for effective team integration as proposed by Carron *et al*., (1985), i.e. task-based communication and social communication. Task-based communication allows team members to identify and discuss issues affecting the project to proffer solutions, while social communication helps to develop, strengthen, and maintain the relationship.

Team Leadership

Another important determinant of a team's success is team leadership. As observed by Engleberg and Wynn (2017), a team's success depends on the quality of its leader; as every good leader will encourage teamwork. Engleberg and Wynn (2017) observed that good leadership enables team members to work willingly and efficiently by fostering mutual trust, confidence, commitment, and job satisfaction among the team. A good team leader assigns specific tasks to members and provides an environment of mutual co-existence with great fulfilment of purpose. It is assumed that team leadership motivates all members by limiting all hindrances to create an effective project team with a high level of common trust and readiness to share information promptly and willingly among members. Without good leadership, a group is noted to be merely a collection of individuals with no coordination and motivation (Engleberg and Wynn, 2017). In construction, the team leader is either the architect or the project manager who coordinates the construction process for optimum performance on behalf of the client. The leader is responsible for facilitating interaction among all team members, planning activities, controlling, and coordinating the outcomes (Project Management Institute, PMI, 2013). In this light, the effectiveness of a team is the direct product of good leadership.

Team Chemistry

This is the measure of perceived understanding among team members and often

derives from the previous working relationship. It is viewed as a complicated factor necessary for an organization's success. Team chemistry is important in team cohesion since members do not exist in isolation. The right combination of the efforts of individual members will determine the effectiveness of a team. Franz *et al*., (2017) stated that team chemistry is always strongly evident in a cohesive team as it allows the members to get along with each other thus fostering loyalty and a commitment to the organizational goals. This results in the timeliness of communication and helps in the swift dissemination of the information required for the achievement of project tasks. Moreover, constant communication, support, and collaboration will help to cultivate team chemistry while working towards the same goals, a transparent and collaborative culture, and ensuring continuous guidance by the team leadership strengthens team chemistry.

Trust and Respect

Trust is viewed as an important factor in achieving effective teamwork that influences successful project outcomes (Wong *et al*., 2008). The non-existence of trust and respect has been established as a potential barrier to team cohesion (Ibrahim *et al*., 2011). It causes members to be suspicious of one another, thereby triggering tension and thwarting the free flow of communication (Cicmil and Marshall, 2005). Velez (2014) noted that the lack of trust among stakeholders reduces team efficiency. Studies have established that trust among project members is positively correlated with members' commitment, perceived task performance, information sharing, and team satisfaction. Emmitt and Gorse (2007) argued that effective team balance is built upon trust and respect, which then leads to optimal performance. According to Dainty *et al*., (2001), project managers who entrench the spirit of trust, commitment, and mutual respect among project participants will create a good atmosphere for performance improvement.

Team Commitment

Commitment is the attitudinal approach or psychological attachment of an individual to a course of action. It is the force that drives an individual to continue in his action even in the face of obnoxious circumstances. Bishop and Scott 2000 (2000) describe commitment as the passion that drives team members' identification with a team. According to Buvik and Tvedt (2017), the degree of team members' commitment to a project is a determinant of the value they place on it and the effort they are willing to exert to make it succeed. Thus, if team members are less committed, they will presumably not exert the level of effort necessary for project success. The complexities and technicalities of the design and construction processes of construction projects require team commitment for a successful outcome. Indeed, team commitment is rooted in the individual's identification with the goals and values of the project and it is the eagerness to be associated with the project that engenders team commitment. In a study by Thamhain (2013), it was found that the commitment to desired results by all team members produces higher results even among cross-cultural team members.

Task Satisfaction

Task satisfaction is the representation of the team's shared attitude, which indicates the level of work satisfaction by team members. Mason and Griffin (2005) defined task satisfaction as the attitude of a team member towards the assigned task and the environment in which the task is to be executed. According to Mason and Griffin (2005), task satisfaction revolves around factors within the purview of the team and the external environmental factors that are outside the control of the team. It was found that task satisfaction helps team members to develop norms that bring about positive task behaviour (Mason and Griffin, 2002). Teams with high levels of satisfaction among members are inclined to attend to their work enthusiastically while seeing their work as motivating, challenging, rewarding, and positive. In contrast, members of a group with low job satisfaction are likely to describe their work as routine, boring, or disruptive.

Relationship between Team Leadership and Stakeholders

The collection of stakeholders in construction will always generate contrasting views. The harmonization and synthesis existing between the team leader and other team members will determine how cooperative and cohesive the team will be. The team leader must have the ability to harmonize and synthesize the various views and needs of stakeholders into the project objectives in a proper coordination process. Smith-Jentsch *et al*., (2001) advised that for proper cohesion within the team, understanding the views and objectives of stakeholders will help to determine the underlying factors that will ensure project success. Team leaders are required to liaise with stakeholders at project inception to dispel all factors that may impede project progress and incorporate the requirements within the required standards. The inability of the project team to fully understand the needs of project stakeholders will lead to dissatisfaction among stakeholders. Considerable efforts should be invested in understanding these requirements to ensure effective project implementation.

RESEARCH METHODOLOGY

The study embraced the use of a literature review and a questionnaire survey for data collection. The study area is Nigeria, a country lying between latitudes 4° and 14°N and longitudes 2° and 15°E. It is bordered on the southern coast by the Gulf of Guinea, by Niger in the north, by Chad in the northeast, by Cameroon in the east, and by Benin in the west. Nigeria has 36 states distributed into six geopolitical zones of north-central, north-east, north-west, south-east, south-south, and south-west as shown in Figure 1. Owing to the nature of data being sought and to ensure more comprehensive representation, the study elicited information from construction professionals who are involved in building projects across the six geopolitical zones of Nigeria via the use of an online questionnaire. According to Evans and Mathur (2018), an online survey has the benefit of flexibility, speed and timeliness, wider reach, convenience (especially when the proposed respondents are widely distributed), ease of obtaining larger samples and the ease of data entry and analysis when large data stocks are obtained. It is against this background that the online questionnaire survey was adopted. The review of literature on factors for the cohesion of team members generated 28 factors used to design the questionnaire survey.

The target population for this study are professionals who are engaged in construction activities in Nigeria. For a wider perspective, professionals from four different firms were selected. These include professionals from contracting firms, architectural firms, engineering consultancy firms and quantity surveying consultancy firms. The population of consulting professionals was collated from the register of their respective professional bodies as follows: (i) Architectural consultancy firms from the directory of Nigeria Institute of Architects (NIA); (ii) Engineering consultancy firms from the directory of Association for Consulting Engineering in Nigeria (ACEN); (iii) Quantity surveying consultancy firms from the directory of Nigeria Institute of Quantity Surveyors (NIQS). The lists of contracting firms were extracted from the construction directory and from the database of the Federation of Construction Industry (FOCI) in June 2019. This exercise produced a total of 2047 construction professionals (Table 1).

Krejcie and Morgan (1970) formula was used to determine the appropriate sample size from the population; this produced 324 professionals. However, Saunders *et al*., (2016) opined that there is the likelihood of encountering sampling error, non-returned questionnaires and non-response bias while conducting survey research. To mitigate the effects of these errors on the sample, over-sampling was recommended (Saunders *et al*., 2016). Bartlett *et al*., (2001) suggested that in adopting over-sampling, the average response rate of similar research should be used to calculate the perceived shortfall. Thus, a 60% average response rate was adopted for this study. The response rate was arrived at after evaluating the response rate of similar studies in the same study area (Dosumu, 2016; Soyingbe, 2016).

Consequently, 540 construction professionals' organizations were generated as the study sample size, this comprises 128 contracting firms, 220 architecture consultancy firms, 88 engineering consultancy firms and 104 quantity surveying consultancy firms. Copies of the questionnaire were then sent to the 540 construction professional firms located in the six geopolitical zones of the study area. Out of this, 211 were returned, but after the returned copies of the questionnaire were screened for completeness and outliers, 202 were found suitable for analysis, representing a 37 percent return rate. However, only 182 of the returned copies of the questionnaire were used in the analysis (this study being a part of a larger study in which a percentage of the returned questionnaire was used for model cross-validation).

Table 1 presents the distribution of the sampling frame by organization type, while Table 2 presents the sampling frame by geopolitical zone. In all, 504 copies of the questionnaire were sent out but only 211 were retrieved while 182 were used for the actual analysis, thus representing a 34 percent return rate.

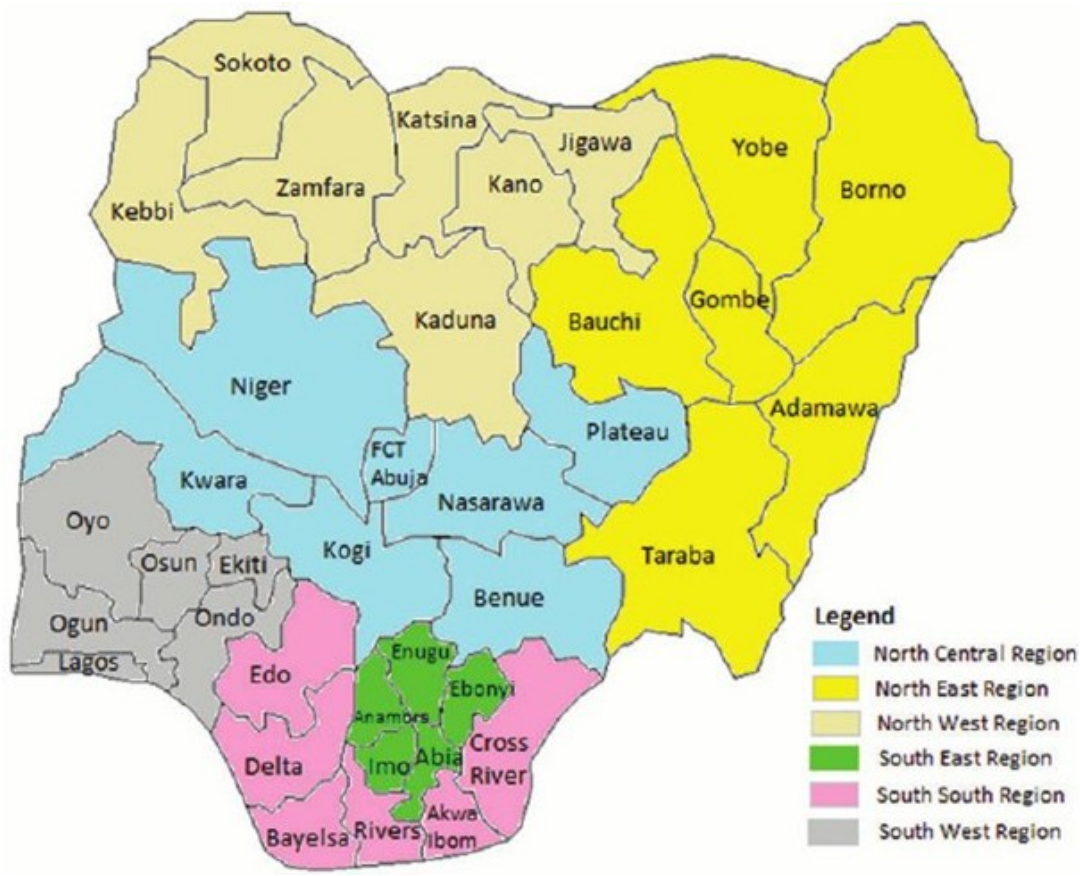

Figure 1. Map of Nigeria showing the 36 states and Federal Capital Territory (FCT), Abuja.

Table 1. Sample Size distributions by construction professionals' organization types

Type of organization	Sampling Frame	% of firm	Sample size
Contracting firms	485	23.69	128
Architecture consultancy firms	836	40.84	220
Engineering consultancy firms	332	16.22	88
Quantity surveying consultancy firms	394	19.25	104
Total	2047		540

Table 2: Sample frame and sample size of construction professionals by geopolitical zones

Geo-political zones	Contracting firms			Architecture Consultancy firms			Engineering consultancy firms			Quantity Surveying consultancy firms		
	A	B	C	A	B	C	A	B	C	A	B	C
North-central	132	27%	35	231	28%	62	102	31%	27	107	27%	28
North-east	40	8%	10	13	2%	4	7	2%	2	7	2%	2
North-west	55	11%	14	88	10%	22	32	10%	9	53	13%	14
South-east	42	9%	11	82	10%	22	18	5%	4	31	8%	8
South-south	46	10%	13	119	14%	31	54	16%	14	48	12%	12
South-west	170	35%	45	303	36%	79	119	36%	32	148	38%	40
	485	100 %	128	836	100 %	220	332	100 %	88	394	100 %	104

Where: **A** = Sampling Frame; **B** = % of the total; **C** = Sample Size

The questionnaire was divided into two parts. Section "A" consists of basic information about respondents, such as organization type, gender, age, years of experience in the construction industry, and role in construction projects. Section "B" was concerned with the purpose of the study. The questions were designed to elicit information on the factors considered to influence the degree of cohesion among construction project team members, of which 28 factors were identified from the literature and the circumstances prevalent in the Nigerian construction industry. Responses from respondents were captured on a 7-point Likert scale, with 1 being the lowest rating and 7 being the highest rating.

Data Analysis

The collected data were analysed using both descriptive and inferential statistics. Respondents' characteristics such as gender, organization type, role in the construction project, and years of work experience were analysed using descriptive statistics. The Relative Importance Index was used to rank the 28 identified factors that engender team cohesion, while Exploratory Factor Analysis (EFA) was undertaken to show the interrelationship among the factors identified. Pallant (2013) suggested that it is important to check if the data set is suitable for factor analysis. Therefore, the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests of Sphericity were conducted.

Results and Discussion

Table 3 shows the background information of respondents. It can be seen that there are more respondents from contracting organizations (N=64), while the organization type with the fewest respondents is engineering consultancy firms (N=27). Furthermore, for gender, there are more male (N=153) respondents than females (N=29). The years of construction work experience reveals that 40% of respondents have less than 10 years' construction work experience. The roles of the respondents on construction projects vary and cut across all professionals involved in construction projects, with quantity surveyors constituting the majority (45.1%).

Table 3: Distribution of Respondents' Background Information

Respondents profile	Construction professionals organizations				
	Contracting firms	Architecture Consultancy firms	Engineering consultancy firms	Quantity Surveying consultancy firms	Total
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Organization type					
Total	64 (35.2)	37 (20.3)	27 (14.8)	54 (29.7)	182 (100.0)
Genders					
Male	53 (29.1)	31 (17.0)	26 (14.3)	43 (23.6)	153 (84.1)
Female	11 (6.0)	6 (3.3)	1 (0.5)	11 (6.0)	29 (15.9)
Total	64 (35.2)	37 (20.3)	27 (14.8)	54 (29.7)	182 (100.0)
Years of construction work experience					
Less than 5 years	7 (3.8)	5 (2.7)	2 (1.1)	12 (6.6)	26 (14.3)
6-10 years	17 (9.3)	7 (3.8)	9 (4.9)	14 (7.7)	47 (25.8)
11-15 years	19 (10.4)	10 (5.5)	8 (4.4)	8 (4.4)	45 (24.7)
16-20 years	15 (8.2)	5 (2.7)	3 (1.6)	6 (3.3)	29 (15.9)
Above 20 years	6 (3.3)	10 (5.5)	5 (2.7)	14 (7.7)	35 (19.2)
Total	64 (35.2)	37 (20.3)	27 (14.8)	54 (29.7)	182 (100.0)
Role on the construction project					
Project Manager	17 (9.3)	16 (8.8)	1 (0.5)	0 (0.0)	34 (18.7)
Architect	6 (3.3)	19 (10.4)	0 (0.0)	0 (0.0)	25 (13.7)
Civil/Structural engineer	5 (2.7)	0 (0.0)	12 (6.6)	0 (0.0)	17 (9.3)
Quantity Surveyor	26 (14.3)	2 (1.1)	0 (0.0)	54 (29.7)	82 (45.1)
Mechanical engineer	2 (1.1)	0 (0.0)	9 (4.9)	0 (0.0)	11 (6.0)
Electrical engineer	2 (1.1)	0 (0.0)	5 (2.7)	0 (0.0)	7 (3.8)
Site manager	3 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)	3 (1.6)
Contract manager	3 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)	3 (1.6)
Total	64 (35.2)	37 (20.3)	27 (14.8)	54 (29.7)	182 (100.0)

Table 4: Interpretation of RII scores

Score	RII	Level of influence
1	0.90≤RII≤1.00	Extremely important (EI)
2	0.75≤RII≤0.89	Very important (VI)
3	0.60≤RII≤0.74	Important (I)
4	0.45≤RII≤0.59	Moderately important (MI)
5	0.30≤RII≤0.44	Not Important (NI)
6	0.15≤RII≤0.29	Very not important (VNI)
7	0.00≤RII≤0.14	Extremely not important (ENI)

As one of the means to achieve the objectives of this study, a 7-point Likert scale was developed and presented to the respondents who were asked to rate the importance of the identified 28 factors as the means of evaluating the factors based on their experience on construction projects. The scale ranges from "7" denoting "extremely important" to "1" denoting "extremely not important". The RII of each factor was calculated and ranked accordingly. Figure 2 shows the rankings based on the RII of each of the 28 factors. The calculated RII score of each factor was interpreted using the scale as presented in Table 4. From Table 4, the RII scores range between 0.00 (extremely not important) and 1.00 (extremely important).

Figure 2 shows the distribution of the relative importance index and the rankings of the 28 identified factors for cohesion among CPTMs from the highest factor to the least factor. The survey response has the RII values ranging from 0.37 to 0.91, thus

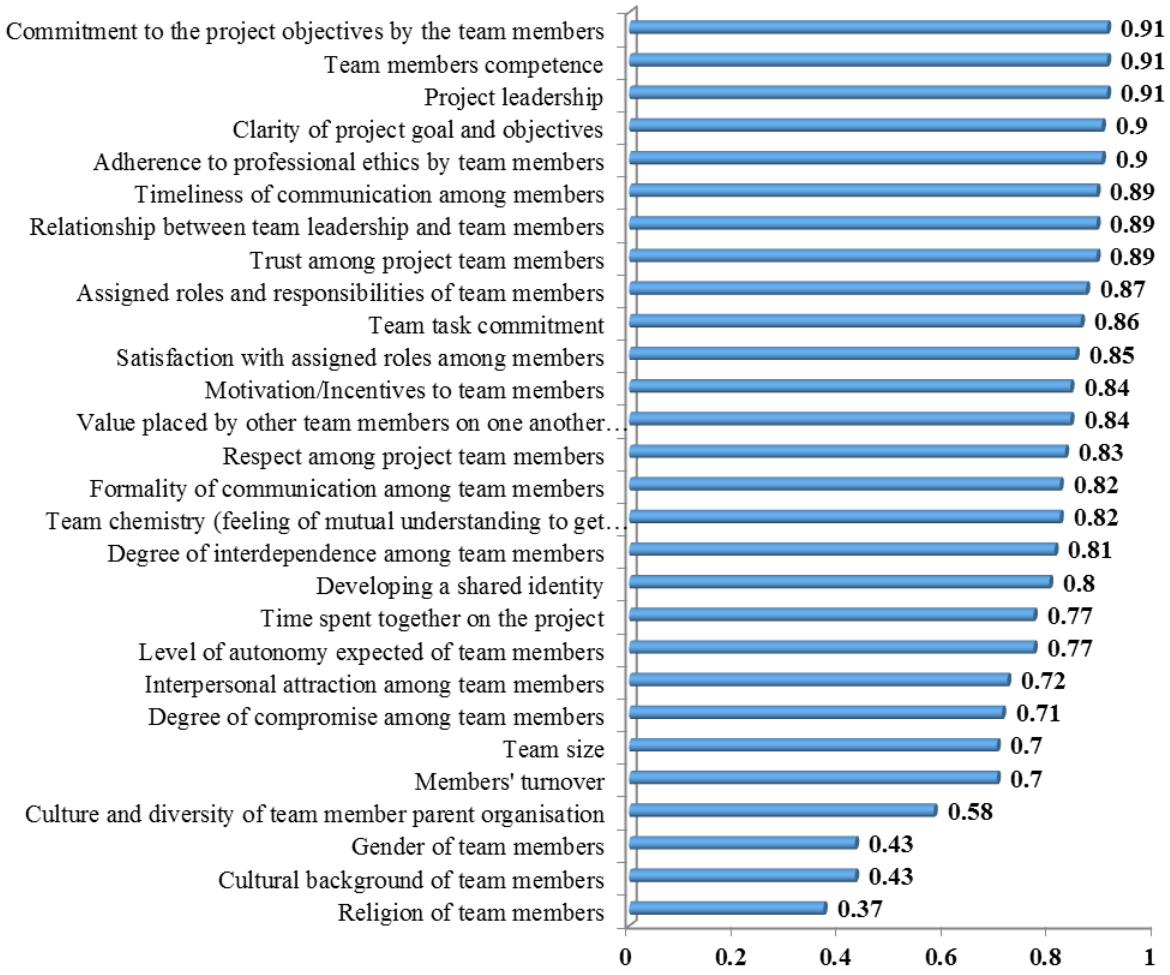

Figure 2. Construction professionals' responses to factors influencing cohesion among CPTMs

indicating that some of the factors were considered to be "not important" (NI), while others were considered "extremely important" (EI). Moreover, the result shows that 25 of the factors have RII that is greater than 0.44, the score from which "important" factors start. The RII values of the remaining three factors range between 0.37 and 0.43. The result shows that five factors are extremely important for cohesion among CPTMs as rated by construction professionals in Nigeria, with RII values of 0.90 to 0.91. The five factors are commitment to project objectives by team members, team members' competence, project leadership, clarity of project goals and objectives, and adherence to professional ethics by team members. This finding is similar to those in some notable studies. For instance, Buvik and Tvedt (2017) identified commitment as an important factor in team cohesion, while Engleberg and Wynn (2017) identified team leadership as one of the top factors for team cohesion.

Furthermore, 15 other factors were considered to be very important (VI) to CPTM cohesion, with their RII scores ranging between 0.77 and 0.89 (Figure 2). Conversely, three factors were ranked least as "not important", viz: gender of team members, cultural background of team members, and religion of team members. Their RII scores were 0.43, 0.43, and 0.35 respectively. The ranking of these factors reveals that they are not significant factors that should be considered when cohesion among CPTMs is required. This finding is not surprising as cohesion is a psychological construct relating to the human response to factors prevailing (relationship with each other) within the immediate environment and other factors surrounding the execution of the task to be

Table 5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.873
Bartlett's Test of Sphericity:		
	Approx. Chi-square	2356.766
	Degree of freedom	378
	Significant level	0.000

performed (Brawley *et al*., 1987).

Interrelationship of Factors Influencing Cohesion among CPTMs

In an attempt to establish a parsimonious and coherent subscale of the factors influencing cohesion among CPTMs and to determine the underlying interrelationship among the 28 variables, the researchers performed an Exploratory Factor Analysis (EFA) on the variables. The EFA identifies variables that measure the same effect. Previous research adopted EFA to reduce variables to more meaningful classifications. Yang *et al*., (2009) conducted the EFA when studying critical success factors for stakeholder management on construction projects. Ankrah *et al*., (2009) conducted the EFA in their study of the factors influencing the culture of a construction project organization, while Ogunsanya *et al*., (2019) conducted the EFA in their study on the barriers to sustainable procurement in the Nigerian construction industry. The use of EFA by construction management researchers influenced the choice of this statistical tool. Pallant (2013) suggested that it is important to check if the data set is suitable for factor analysis. Therefore, the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests of Sphericity were conducted. As shown in Table 5, the result revealed a KMO sampling adequacy of 0.873. This denotes great adequate sampling (Field, 2013). The strength of the relationship between variables, measured by the Bartlett test of Sphericity, revealed a significant value of 0.000. This implies that the data are acceptable for further analysis at a significance of less than 0.05 (Field, 2013; Pallant, 2013). Therefore, it can be said that the data obtained from this study are suitable for conducting EFA.

Labelling the Components of the Factors Influencing the Cohesion of CPTMs

Table 6 shows the result of the EFA conducted on the 28 identified factors that influence cohesion among CPTMs. In carrying out the EFA, the extraction method employed was principal component analysis using Varimax rotation with Kaiser Normalization. The rotation was conveyed in 7 iterations. The outcome of the analysis grouped the 28 factors into six major components with a variance of 30.227, 12.192, 5.890, 4.728, 4.094, and 4.030 percent for the 1st, 2nd, 3rd, 4th, 5thand 6thgroupings respectively. The total variance explained by the four factors accounted for 61.162 percent. From Table 6, it can be seen that the least factors in the four extracted groupings are 0.538, 0.453, 0.583, 0.487, 0.399, and 0.667. This outcome shows that the variables are well correlated. As such, there is no need to eliminate any variable from the analysis. According to Kline (2002) factor loading with a value of 0.30 or higher is considered significant. This statement was corroborated by Brown (2009), who suggested that variables loading with a value close to 1 are important and any value closer to 0 should be taken as not important.

To get an appropriate label for each extracted component in the EFA, researchers usually adopt the factor with the highest loading in each component to label the component. This is usually the practice when it is sometimes onerous to choose a name for the component. After a thorough examination of all the factors and their loadings, six-component labels for the variables emerged. Thus component 1 was labelled 'shared identity', component 2 was labelled 'roles and responsibility of team members', component 3 was labelled 'social entity', component 4 was labelled 'respect and trust', component 5

was labelled 'team chemistry' and component 6 labelled 'team size'.

Component 1: Shared Identity

'Shared identity' is the variable with the highest percentage of total variance explained (30.227%) among the six components. 'Development of shared identity' is the factor with the highest loading (67.0%), while 'level of autonomy expected of team members' (53.8%) is the least among the component group. All factors in this component depict factors that are critical to the engendering of cohesion among CPTMs. A good CPTM must exhibit shared identity; members should see the construction project to be embarked on as the symbol of their shared identity and they must place a premium on the expert input of all professionals. These factors should be prioritized if a construction project team must achieve cohesion. Without a 'shared identity', members of any team might tend to act in the fulfilment of personal drive as against the overall interest of the team or project.

Component 2: Roles and Responsibility of Team Members

The second important component of the factors for achieving cohesion among CPTMs is 'roles and responsibility of team members'. This component accounts for 12.192% of the variance explained. 'Assigned roles and responsibilities of team members' is the most important factor, with loading of 77.6%. Other factors under this component are 'timeliness of communication among members' (73.9%), 'commitment to project objectives by the team members' (67.0), 'clarity of project goal and objectives' (51.6%) and 'formality of communication among team members' (45.3%).

Component 3: Social Entity

This component is the third in order of importance in terms of contribution to the variance of the factors for achieving cohesion among CPTMs. With a total variance of 5.890%, it has four factors: 'cultural background of team members' (88.4%), 'religion of team members' (87.9%), 'gender of team members' (87.7%) and 'culture and diversity of team member's parent organization' (58.3). These factors were ranked 27th, 28th, 26th, and 25th respectively (Figure 2). Although they were considered to be of no importance (Figure 2) in the ranking by construction professionals, social entity factors were loaded together. This means that although they are of less importance, they cannot be ignored when cohesion among CPTMs is concerned. Adequate consideration should be accorded to religion and cultural background, which are social factors with considerable implication, on the ability of members to relate together, especially in a highly diverse nation like Nigeria.

Component 4: Respect and Trust

Respect and trust are very important factors for team cohesion both in construction and other human endeavours. This component consists of four factors with a total variance of 4.728%. Of the four factors under this component, Table 6 reveals that 'respect among project team members' is the most important factor, followed by 'trust among project team members'. This underscores the importance of respect and trust, especially for its tendency to boost the morale of team members. The willingness of a team member to participate actively in 'teaming' activities depends on the amount of trust among members. Therefore, team members, especially the team leader, should create an atmosphere of trust and respect that will foster cohesion among team members.

Component 6: Team Size

This is the least in the ranking of the component groupings, with a 4.030% variance explained by just two factors. The factors are ‘team size’ and ‘members' turnover’, with factor loadings of 71.3% and 66.7% respectively. It might be difficult to achieve cohesion when a large team is involved. Therefore, it is necessary to have the right size of team members to maintain cohesion among CPTMs. Furthermore, the rate of team members' turnover will draw members back and halt the progress already being made. The team leader must work cooperatively with other team members to reduce the incidences of team turnover to maintain and increase the existing cohesion among CPTMs.

Table 6: Exploratory Factor Analysis of the factors for Achieving Cohesion among CPTMs

	Extracted and Rotated Component	1	2	3	4	5	6	Eigen value	% variance
Component 1: Shared Identity								**8.464**	**30.227**
F14	Development of shared identity	0.670							
F21	The value placed by other team members on one another's contributions	0.669							
F12	Degree of interdependence among team members	0.667							
F20	Team members competencies	0.634							
F11	Adherence to professional ethics by team members	0.569							
F13	Level of autonomy expected of team members	0.538							
Component 2: Roles and Responsibility of Team Members								**3.414**	**12.192**
F5	Assigned roles and responsibilities of team members		0.776						
F7	Timeliness of communication among members		0.739						
F6	Commitment to the project objectives by team members		0.670						
F1	Clarity of project goal and objectives		0.516						
F8	The formality of communication among team members		0.453						
Component 3: Social Entity								**1.649**	**5.890**
F28	The cultural background of team members			0.884					
F27	Religion of team members			0.879					
F26	Gender of team members			0.877					
F25	Culture and diversity of team member parent organization			0.583					
Component 4: Respect and Trust								**1.324**	**4.728**
F4	Respect among project team members				0.756				
F3	Trust among project team members				0.750				
F2	Project leadership				0.664				
F22	Time spent together on the project				0.487				
Component 5: Team Chemistry								**1.146**	**4.094**
F17	Team chemistry (feeling of mutual understanding to get along)					0.743			
F16	Degree of compromise among team members					0.700			
F18	Motivation/Incentives to team members					0.588			
F15	Interpersonal attraction among team members					0.536			
F19	Relationship between team leaders and team members					0.473			
F10	Satisfaction with assigned roles among members					0.400			
F9	Team task commitment					0.399			
Component 6: Team Size								**1.129**	**4.030**
F23	Team size						0.713		
F24	Members' turnover						0.667		
	Cumulative % of variance explained								**61.162**

Conclusion

This study has presented the RII score rankings for 28 identified factors for achieving cohesion among CPTMs in Nigeria. The results show that 25 of these factors are important. The ranking indicates that cohesion among CPTMs can be improved if all CPTMs are committed to project objectives. If all CPTMs are in tune with the project objectives, there will be seamless transactions and each will deliver its part of the project, thereby fostering cohesion. Another important factor is the competence of team members, as competence helps to minimize incidences of mistakes and incomplete designs which are common with projects executed in Nigeria. Lack of competence on the part of any or all of the CPTMs can be a major factor that could have major consequences on the cost, time and quality objectives of the project. This may lead to disaffection among CPTM. The third-ranked factor that is observed and considered to be extremely important is project leadership. This is because the project leader's approach to directing the team will determine the degree of cohesion among the team and will have an impact on the level of communication, trust, sense of direction, and sense of belonging among team members. Team leadership positively affects the productivity of team members. Other extremely important factors influencing CPTM cohesion are clarity of project goals and objectives and adherence to professional ethics by team members. The degree of clarity of the project goal helps team members to accurately devise SMART means of achieving the goal. When the client is not sure of the goal of the project, the commitment of project team members may be affected.

It is necessary to understand the factors that influence cohesion among CPTMs. As observed by Carron, Bray, & Eys 2002), a high level of cohesion among members of any team or group tends to improve performance. There is no doubt that the peculiarity of the construction industry, where there is always a broad range of multidisciplinary professionals working together, makes this study particularly relevant. The study was able to provide the rankings of 28 identified factors influencing the achievement of cohesion among CPTMs. The results show that some factors were considered extremely important based on their ranking, while others were considered somewhat not important. Some of the important factors include 'commitment to project objectives by team members', 'team members' competence', 'project leadership', 'clarity of project goal and objectives', and 'adherence to professional ethics by team members'.

Based on the Exploratory Factor Analysis (EFA), this study collapsed the 28 identified factors into six parsimonious groupings of ‘shared identity’, ‘roles and responsibility of team members’, ‘social entity’, ‘respect and trust’, ‘team chemistry' and 'team size'. In that regard, the study contributes to the literature on the level of cohesion among construction project team members. It is therefore suggested that to improve the level of cohesion among team members, especially CPTMs, the identified "very important" factors should be prioritized, while the three "not important" factors should be taken as secondary factors.

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