

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

**COLLEGE OF ART AND BUILT ENVIRONMENT DEPARTMENT
OF BUILDING TECHNOLOGY**

KNUST

**AN INVESTIGATION INTO THE PERFORMANCE OF GHANAIAN
CONSTRUCTION PROJECT TEAMS**

BY

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MASTER OF SCIENCE IN CONSTRUCTION MANAGEMENT

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DECLARATION

I hereby declare that this submission is my own work towards the MSc and that, to the best of my knowledge, it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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DEDICATION

*This dissertation is dedicated to
loving memory of my late wife
Mrs. Veronica Fobiri*



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ABSTRACT

Increasingly, project teams in the construction industry are usually established as soon as new project start. This is done to meet today's competition and customer expectations. A project is said to be successful when it meets all the project objectives; time, cost and quality. To ensure that the project meets its objectives, construction project team must perform successfully and very effectively. Creation of a very effective project team will yield a successful project outcomes that will surpass the project requirement and achieve overall success. This study aimed to assess the performance of Ghanaian construction project teams by identify the construction project team characteristics, factors that constitute the project team performance measurement and measure the project team performance base on the team performance measures. To achieve this an extensive literature research was carried out to identify the characteristics and the factor that determines the performance of project teams. Eighty (80) construction project team characteristics and a forty (40) factors of project team performance measurement were identified. Quantitative research methods were adopted for this study, of which are survey questionnaire were used to solicit data from the ongoing and newly completed construction project in the tertiary institution in Ashanti region. Sixty – four (64)

questionnaires were retrieved out of Seventy (70) distributed. The data collected was analyzed using statistical package for social sciences (SPSS), which include relative importance and factor analysis. Also a project was selected as a case study to measure the performance of the project team. The study revealed that performance of project team members is very vital to the overall performance of the project team and project success as a whole having a mean score of 4.151 on the ranking of the seven (7) main factors of project performance measurement identified. This means that the higher the performance of project team members, the higher the project realizing its success. Secondly, every effective project team must inherent certain unique characteristics to be able to perform effectively. Fourteen (14) common characteristics identified in the Ghanaian construction project team, some are; Good working relationship among team members, Concern for team members because taking good care of the team members, Effective motivation systems for team members, Concern for each other member of the team, Setting of achievable goals for the teams, Subgroups are incorporated into the team. The overall team performance of the selected project was found to be 66.86%. The study revealed that performance of the individual project team members is very vital to the performance of the construction project team as well as it vital to every project success. The outcomes from this study are anticipated to assist the top management and project team leadership to increase their knowledge on project team characteristics and factors that contribute to team performance measurement.

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CHAPTER ONE

1.1 INTRODUCTION

This chapter covers the background, the statement of problem, aim and objectives of the study. Furthermore, the chapter elaborates the research methods, the scope and the organization of the study.

1.2 BACKGROUND

The construction industry plays important part in the economy of developing countries like Ghana. Ghanaian construction industry is an important sector of the economy providing about 8.5 % to the total Gross Domestic Product (GDP) whiles engaging 2.3% of the Ghanaians (Ankomah, et al., 2010). Due to the complex nature of the construction industry, a large number of people are involve such as clients, contractors, consultants, etc. (Navon, 2005). Construction teams are normally formed for almost every new project since every project is unique on its own. Since the success of the construction industry has an effect on the national economies formation of an effective construction project team is also necessary for economic development. Mohrmair et al. (1995) affirm that team is an essential element in a company. It is necessary meeting today's global competitive demands and achieving customer expectations. A good project team is expected to create good working relations and possibly accomplish better outcomes, whiles disputes within teams are reduced (Demkin, 2008).

A project team works together collaboratively by sharing of knowledge and experience to ensure projects meets its objectives (Azmy, 2012). Construction project team formation goes beyond bringing professionals together. This does not ensure effective functioning of the team. The construction team members are nominated based on the project

specifics, functions, technical and monetary accuracy of design, and the effectiveness of the project (Cornick & Mather, 1999).

Evbuonwan and Anumba (1998) indicated that failure of project team members to work collaboratively is one the causes of poor performance of the construction industry. Project team integration is one of the vital force of variations necessary for the construction industry to become more successful (Egan, 2002). Project teams are often confronted with problems such as absence of association, confusions, poor communications, and insufficient involvement from team members, which, tend to affect the performance of the project. It is for this reason that it is vital for project team leaders to discover an answers to aid their team members to incorporate and working together efficiently for the success of the construction project.

1.3 PROBLEM STATEMENT

Construction project teams are established immediately new project is realized (Azmy, 2012). A team is an assembly of professional who depend on co-operative strength, specific skills and capabilities of each interdependent team player (Chow, et al., 2005). A project team works together collaboratively by sharing of knowledge and experience to ensure projects meet their objectives (Azmy, 2012). The construction project team comprises individual professionals with varied experiences, each possessing a distinctive set of desires he/she aspires to attain in the delivery of the project. Globally, this has been identified to cause lack of corporation, misunderstandings, poor communications, dispute, conflict, etc in the project team. Due to the crucial role construction industries play in developing countries, performance improvement of project teams ought to be the priority of governments and industrial practitioners (Yimam, 2011). This necessitates an

investigation into the typical construction team profile i.e. common characteristics associated with construction project teams in Ghana.

Cantu (2007) indicated that the effective measurement of project teams rely on the likelihood that the more teams function effectively, the better the benefits that will probably accrue through the project delivery. Team structures solely do not suffice the successful development of workplace quality, efficacy, worker attitude and productivity. It is important for the project team participants to reflect on the functioning of the team regularly. This can be achieved by regularly assessing and evaluating individual team members and even the client on what has not going on well, what is going well, and what could be enhanced (Busseri et al., 2000). Sound measurement of team performance is required to help in productivity, quality, health and safety, and team attitude improvement across the whole construction process (Azmy, 2012). It is essential for effective team performance variables to be developed to enhance the assessment and evaluation processes of Ghanaian construction projects.

In any general assessment and evaluation of construction projects, the dimensions of cost, quality and time cannot be left out. The project team has a part to play to confirm that the project outcome is acceptable and the owner gets worth for money spent (Kheni, 2010). This research therefore is to investigate the performance of Ghanaian construction project team by exploring project team characteristics, performance measurement variables and a case study on the performance of a typical construction project.

1.4 RESEARCH QUESTIONS

1. What are the characteristics of typical Ghanaian construction projects team?
2. What constitutes team performance measurement from practitioners' perspectives?
3. What is the performance level of a typical Ghanaian construction project team?

1.5 RESEARCH AIM

The aim of the research is to assess the performance of a Ghanaian construction project team.

1.6 RESEARCH OBJECTIVES

The specific objectives of this research are:

1. To identify typical Ghanaian construction project team characteristics.
2. To determine the constituents for measuring project team performance from the perspectives of project team members.
3. To measure the performance of Ghanaian construction teams using the project performance measures.

1.7 SCOPE

The research covers construction project consultants and contractors on ongoing and newly completed construction projects in the tertiary institutions in Ashanti region.

1.8 SIGNIFICANCE OF THE RESEARCH

This research aimed to contribute to knowledge on team performance and its impact on construction projects. It is also expected to assist project managers and construction team leaders to understand team characteristics and external factors that hinder team performance. From an academic perspective, this research will aid to poise the literature by assessing Ghanaian Construction project team profile and determine factors that constituent project team performance. From a management standpoint, this study will assist the project supervision and project leaders to expand their understanding on team profile and factors that contribute to team performance. Also, this study is expected to

inspire other scholars to carry on studies relating to team performance on construction project teams.

1.9 RESEARCH METHODOLOGY

Objective 1

To identify typical Ghanaian construction project team characteristics, a preliminary survey was conducted to randomly select ongoing and newly completed projects in tertiary institutions in Ashanti region. Ongoing and newly completed projects were chosen so that current data could be collected; the data can easily be accessible from working team when the project is in progress in order to study and interrogate other related issues, and not rather from a disbanded team. These projects vary from each other in source of funding, range of work and different organizational aims. But, the duty of executing building projects is the same. The ongoing and newly completed construction projects in tertiary institutions in Ashanti region were selected with a defined standards as indicated below;

1. Projects selected are multi-storey complexes.
2. Project type was entirely new works.
3. Both publicly and privately owned buildings were engaged in the study. The profile of the teams on the entire selected project were surveyed and then further aggregated to determine the profile that is most common among all the surveyed teams.

Objective 2

In determining empirically the constituents for measuring project team performance from the perspectives of project team members. First, factors that define success of construction project team were identified through extensive review of literature.

Following this, open ended questionnaires were developed to solicit the opinion from the project team members perceptive on defines team performance measurement. The targeted respondents

were construction project team members in the selected ongoing and newly completed projects in Ashanti region. Thirdly, the data were analysis using relative importance index (RII) in ranking the factors that evolved.

Objective 3

To measure the performance of a selected construction project teams on the basis of a given project performance measures. The case study approach was sought to find out how the project team is performing according to the well-defined standard. The project performance measures identified in literature were used to measure the team performance.

1.10 RESEARCH ORGANIZATION

The review of past literature, collection of data and presentation of results were done in the following five chapters.

Chapter one covers the Introduction of the study

Chapter two contains report on extensive literature research on the study area.

Chapter three deals with the Methodology accepted for the research.

Chapter four discuss how data Analysis, discussion of results and data presentation

Chapter five offer research conclusions and recommendations.

CHAPTER TWO

2.0 LITERATURE REVIEW 2.1 INTRODUCTION

This chapter delineates the literature found in previous researches on team characteristics, attitude and behavior, and how they impact the effectiveness of teams (Cohen and Bailey, 1997; Metcalfe and Linstead, 2003), team structural features and how they perform (Stewart, 2006), cultural relations and diversity of teams and conflicts within teams (Chang et al., 2004)

A list of previous studies makes use of behavioral observations to identify the behavior of teams (Stevens and Champion, 1994; Taggard and Brown, 2001) whilst the others make

use of team features linking to team effectiveness (Gist et al., 1987; Levine and Moreland, 1990). Behavioral characteristics including cohesiveness relating to how well the team is doing (Evans and Dion, 1991), team lifespan and members verbal behavior forms (Wheelan, 2003). Teams become more productive and efficient when members possess attributes such as openness, supportiveness, trust and helpfulness (Steven and Campion, 1994). Collective behavior or cooperation has been indicated to enhance goal achievement (Hartenian, 2003).

The thesis in question lists common “behavioral characteristics” that somewhat determines team performance through project team development theories (Tuckman, 1965; Woodcock and Francis, 1996), previous research (Janis, 1982; Choi, 2002) and meta-analysis of evaluations (Bettenhausen, 1991). Previous studies on team structure including size, type, membership and size of organization were assessed in the Ghanaian Construction industry. Team demographic characteristics of gender, age, ethnicity, educational level, tenure leadership and problem solving experience were also assessed (Kozlowski and Bell, 2003, Cohen and Bailey, 1997, Levine and Moreland, 1990 and Gist et al., 1987).

Teams are described to be a formally organized individual groups working independently with a common goal, and mutually accountable for the accomplishment of tasks and goals through regularly meet (Hackman, 1987; Sundstrom et al., 1990). A team is made up of independent professionals formally organized to undertake a specific problems solving task and meet goals including quality, customer service and productivity in general (Guzzo and Dickson, 1996; Ilgen, 1999; Jordon et al., 2002).

Teams are also referred to as a lesser group of participants that are dedicated to team objectives and jointly answerable to another (Katzenback and Smith, 1994). The members

constituting such teams interact and coordinate with one another in order to accomplish the set up goals, take leadership turns where allowed, attend meetings and have discourse on the task as well as share the responsibilities. Team members adapt behavior relative to the team task demands. For instance, if project teams face time constraints, there is the likelihood that the focus will be shifted from social and emotional issues to the team task that requires greater action (Levine and Moreland, 1990).

It makes use of quality control (statistical) to manage and observe product and process quality and centers on chances to increase quality and productivity values (Eunson, 1987; Guzzo and Dickson, 1996). Project teams that accomplish less intricate jobs need standard working processes and thus standardized discipline and behavior is expected (Campion et al., 1993). Small Group Activity team is constituted by cross-functional professionals working on large spectrum of numerous tasks, including taking part in the designing of the product and solving difficulties in the work procedure (Hackman and Wageman, 1995). The Small Group Teams are perceived to be transient, with responsibility of solving short-term problems incorporating various departments of and organization (Samson and Daft, 2003; Guzzo and Dickson, 1996). Cross-functional teams have identify to be negatively linked to how well the team is doing because of the varying differences in member educational levels, experiences and/or values as a result of diverse disciplines hindering quality of the teamwork (Yeh and Chou, 2005).

Project teams do work on non-repetitive jobs, with professional from diverse functional units and disciplines, such that individual specialize capability could be useful to the construction project (Cohen and Bailey, 1997). Multi-functional project teams positively associated with rapid development times (Cohen and Bailey, 1997).

A project team usually is constituted by permanent members who have useful skills (Samson and Daft, 2003). The team members are more stable because most of them are

engaged on around the clock with a well definite job purposes (Cohen and Bailey, 1997). Basically, departmental teams receive direction from managers who make great part of all conclusions as to what is to be done, how it's to be undertaken, and who is responsible.

Teams have been also been categorized into “individualized” and “systematized” teams. Systematized teams require motivation, supervision, indoctrination, communication, and the presence of “intellectual standardization” in the team. Individualized team type also involves single perspectives that will have substantial influence on the structure because there is not any standardized process or format for the project teams (Woodcock and Francis, 1996). Previous studies submit that less complex tasks are extremely routine and organized, and includes foreseeable circumstances which is successfully and efficiently manage in the spheres of standard working procedures (Hambrick et al., 1998; Choi, 2002).

The types of teams from literature are indicated in the Table 2.1 below;

Table 2. 1 Team classifications

Team Category	Temporary Duration	Lasting Duration
Systemized	Small Group Activity (SGA)	Quality Control Circles (QCC)
Individualized	Project	Departmental/work teams

Source: Adapted from (Heng, 2006)

Teams that are developed well do rotate the leadership roles i.e. change and share headship responsibilities. This is perceived to be a litmus test underlying high accomplishing teams (Katzenback, 1997). When the leaders effectively implement tactics, there is a commensurate improvement in performance (Durham et al., 1997).

Then also, lack of proper leadership negatively affects team leadership (Burgoon and Ruffner, 1978).

When teams have additional self-sufficiency and responsibility for deciding on conclusions, reliance on informal leadership is enhanced (Guzzo and Dickson, 1996; Neubert, 1999). Leadership roles are indirectly linked by their effects on set up goals on team performance (Locke et al., 1998; Durham et al. 1997). Leadership developing goals enhances sureness in the assistants and affects the self-efficacy of teams on goal accomplishment (Kirkpatrick and Locke, 1996).

2.2 REASONS OF PROJECT TEAMS

For a project team to start, it's for two cardinal reasons: task achievement and personal development (Wheelan, 1999; Smith, 1996). Personal development teams have the goal of developing the members' understanding and skills in dealing with their personal situations. Also, task achievement groups have the purpose of using specific tasks or problems to enhance or implement systems. These two basic team types will have different features. It has been however reviewed in literature that there is little or no differences between them.

2.3 CONSTRUCTION PROJECT TEAMS

The Ghanaian Construction Business engaged in numerous projects undertaken at both private and public levels. Any of such projects require quite diverse people in line with profession, knowledge and job capability, and also necessitates them to work together with others who are of diverse companies. The construction business handles the linkages between individual, task, team and headship (Adair, 1983). It suffices to comment that cooperation is of high dominance in the cultural tradition of construction at the bases of successful projects. Construction teams and teamwork have been influenced by exceptional and diverse features in the industry, in business-wise terms. This is better seen when combined project delivery means are used, where teams begin working as a unit, improving the delivery times, reducing costs, and generating a good working relationship throughout the whole project. Yet, numerous obstructions and challenges to construction

teamwork, including mistrust and disrespect, amongst the project members and also expert competition which must be solved at all cost towards the development and maintenance of teamwork across all the processes of project (Uher and Loosemore, 2004).

The need of construction firms today is to hold unto teamwork in a wider sense far above just single work teams, as a result of the complexity of construction business. A project involves in a collective course that includes number of diverse professionals drawn to organize the project team. This team has the responsibility in designing and constructing an infrastructure projects. Any parties associated with construction project teams e.g. the project manager, crews, site superintendent; do appreciate the vitality of effective project teamwork. The project manager is regarded as the utmost significant participant responsible for either project success or failure (Hendrickson and Au, 1988). Project manager of the client always work in collaboration with other participants, including contractors, architects and structural engineers, with each of them is accountable on the designing and/or building procedures. Getting the capable project manager is very important because he is the assumed to be in charge of the project at various phases, irrespective of the nature of arrangements for project implementation.

The construction project team is made up of different people with diverse cultural inclinations. Construction project teams have been defined as a loose grouping of interested participants organized for exact project. Typical construction project teams are portrayed to automatically include the project manager, who is the representative of the client, engineer, or architect for the design team and also the contractor.

In addition, other participants may fall under this main parties, i.e. construction site workers, supervisor, etc. Stakeholders of construction are seen as carefully related to the project team, with authorities and responsibilities spanning from occasional contributions

in focus groups and surveys to full fund of projects, such as offering political and financial provision.

The participants of typical project teams have been stated as project manager, client, legal consultant, financier, subcontractors, main contractors, design leaders (architects and structural engineers), other design consultants, cost consultants, other consultants (as project may require), and the end user of the delivered project as may be appropriate (Uher and Loosemore, 2004).

These list however, is reliant on the type, magnitude and intricacy of the project, and also the delivery method adopted for the project. Divers delivery methods need different project team constitution. However, the common team members include the owner, architect, project manager, engineers, subcontractors and main contractors.

The client of the project could either be public or private party. Typically, the owner has a part to play on defining the scopes, objectives and requirements of projects, as well as providing the necessary funds to undertake the project. The design team which encompasses the engineers, architects and other consultants, produce the construction documents for the owner. The contractor to the project usually construct the project in a conducive setting and depends greatly on the subcontracted labour. In addition, other indirect members, such as zoning authorities, city planners, safety specialists, union officials, government engineers, health specialists, vendors, subcontractors, users, special usage groups etc., who are referred to as indirect or external stakeholders, do affect the construction projects somehow (Azmy, 2012).

The fundamental function of the project stages is important in starting a project team, and also defining the roles and tasks, no necessarily in line with prescribed duties. A typical project is constituted by six major stages, viz; project scope, actual design development, specification writing, tendering process, construction, and maintenance (Azmy, 2012). The

functions of all the project phases are accomplished always on every project, irrespective of delivery method i.e. whether construction management, design and build, design, bid and build, or a combination of them. The technique of construction delivery only varies the relationship and context in the period such functions are attained (Cornick and Mather, 1999).

A special nature of construction project teams is the constitution ranging from phase-to-phase of entire life of the project. This is realized as the members work jointly across the project life; the purpose of same team members changing whilst each phase is reached.

Also, the membership of teams might differ according to type, scope and intricacy of project. The project manager and owner are part of the project from start to finish across the six phases. Other significant members of the team such as contractor, designers, and subcontractors, only join the project team as and when their expertise is required by the project. They withdraw from the project upon completing their required tasks.

The Figure 2.1 below shows the summary of breakdown of the members of the project team associated with each stage of the project, in line with their basic functions. Construction projects are encompassed with constraints in terms of budget, schedule and performance requirement. It is actually necessary for the team to completely comprehend the project set up and how crucial it is to grow effective teams. The participants are carefully chosen subject to the varying capabilities and professional expertise, skills and experience each member demonstrates in the performance of technical contribution in the most profitable and efficient way. Some are also selected in line with the requirements of the project including, political, economic and social requirements.

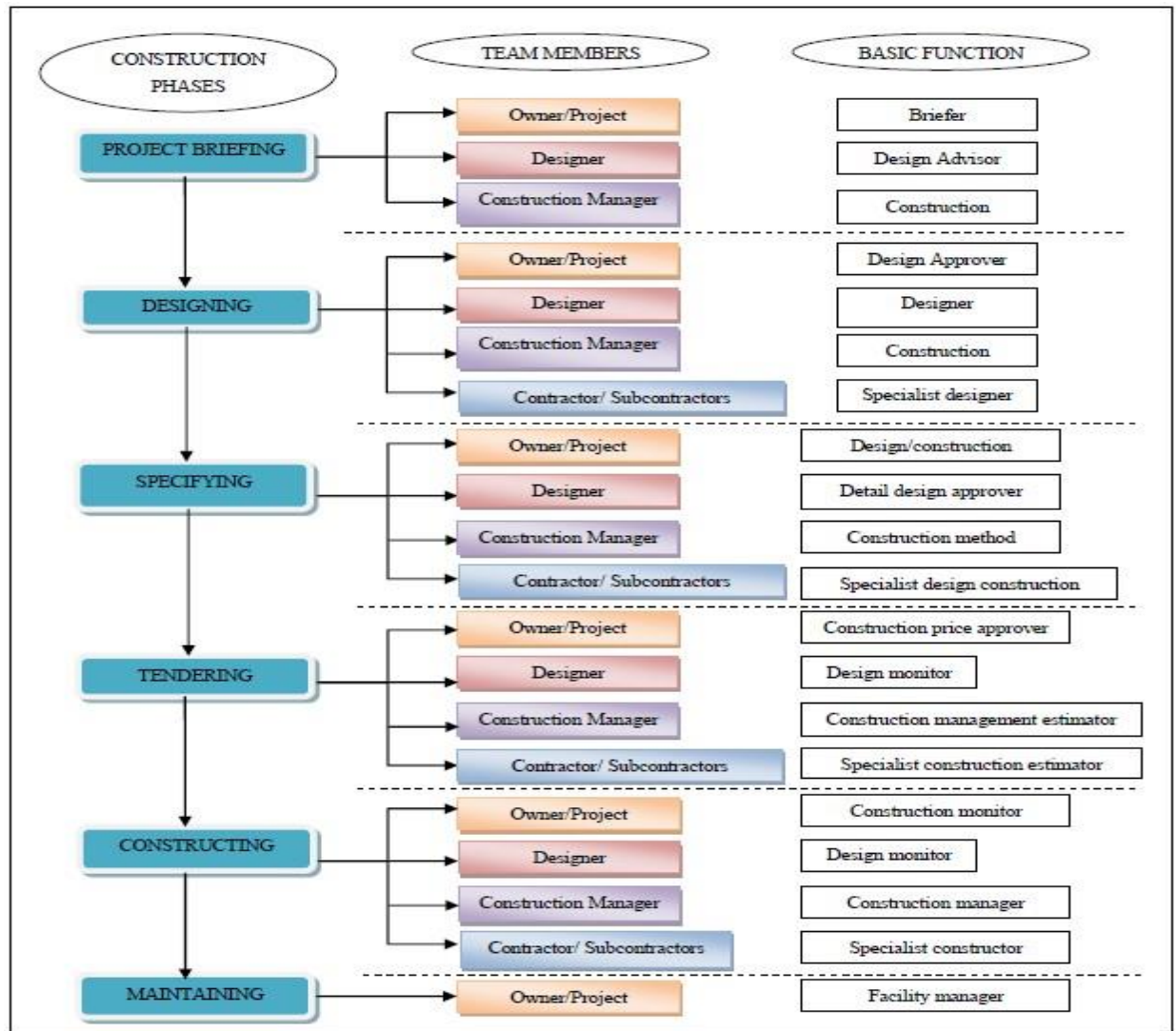


Figure 2. 1 Construction project team's basic functions (Amzy, 2012)

2.4 TEAM CHARACTERISTICS

This portion of the literature review deals with the various characteristics of construction project teams which have been put under three different groups, viz; behavioral, structural and demographic characteristics. These are further elaborated below;

2.4.1 BEHAVIOURAL CHARACTERISTICS

There is statistically significant link existing between behavior of team members and overall performance e.g. participating and including others, planning of goals, feedback systems, commitment of teams, response to conflicts, management of conflicts, and communication. Also, previous findings have shown that there is an important relation

between team characteristics and overall performance (Stevens and Campion, 1994; Neuman et al., 1999; Hoigaard et al., 2006).

Interpersonal skills, leadership direction, adaptability, communication, decision making and shares situational alertness add up to the effectiveness of teamwork (Cannon-Bowers et al., 1995). Each project member features of abilities, knowledge and competencies are crucial for success of teamwork (Steven and Campion, 1999). Individual behaviors in teams have significant associations with productivity (Brown and Latham, 1999; Latham and Wexley, 1977).

Teams with good interpersonal relations are effective due to the fact that they tend to be more creative because members necessarily do not have to deal with conflicts. Qualities of trust, initiative, helpfulness, honesty, supportiveness and flexibility are perceived to be desirable characteristics of project teams (Stevens and Campion, 1994). Collective behaviors or cooperation enhance the goal achievement process (Hartenian, 2003). The behaviors and attitudes of members as well as their concerns for one another are related to the performance of the teams (Metcalf and Linstead, 2003). Further, the open relevant information sharing system and proper coordination of team tasks promote teamwork efficiency (Hoegl and Parboteeah, 2003).

The viewpoint of how well a team is doing, however relies on the inspectors' viewpoints e.g. the team leader, members, customers and company (Cohen and Bailey, 1997). Team characteristics (cohesion and conflicts) have also been found to fluctuate in various phases of teams, but in later phases, social cohesion increases (Yang and Tang, 2004). Teams develop into problem-solving tool as the members accept and handle roles that successfully accomplishes team tasks. Teams become, functional and flexible, and the team energy is gradually directed into team tasks. The members then experience cohesion, attain new standards, feature in new responsibilities, and are contented in sharing their opinions.

Teams with clear goals, objectives and common anticipations do offer steady internal direction for the benefit of the team which results in boosted performance. Project teams are often necessitated to set up goals, identify and also define the roles of members that brings substantial stress on the team (Janis, 1982; Choi, 2002).

2.4.1.1 Cohesiveness

Cohesiveness has been described as the need of belonging as a result of an attraction or because there is like for the other members (Festinger et al., 1950 cited in Steer and Porter, 1975). The need to belong was also augmented that it is essential for members to be well identified with the teams otherwise the individual members will self-categorize themselves into groups and build on more encouraging attitudes, and also liking for other members similar to themselves (Turner, 1987). Members of teams with similar values, attitudes and enjoying togetherness are very attractive to the teams (Samson and Draft, 2003).

Other studies define cohesiveness as the extent to which teams ably complete the set goals and also enhance higher productivity (Gibbard and Hartman, 1973; Hare, 1976).

Cohesiveness is establish as a result in higher performance levels in various firms (Hirokawa, 1983; Larson and LaFasto, 1988). Members of teams with high cohesiveness often attend meetings, are committed to the activities of teams and very joyous when teams achieve success (Samson and Draft, 2003), whereas teams with poor cohesiveness are more independent and are less concerned about other members of the teams (Shaw, 1976).

Team cohesiveness is regarded a crucial issue that affects the performance of teams (Carless and DePaola, 2000; Hoigaard et al., 2006) and a tough indicator of conduct linked to how well the team is doing (Bettenhausen, 1991; Yang and Tang, 2004). It frequently encourages members to cooperate and better perform (Cartwright, 1968; Weaver et al., 1997). Such teams more efficiently use the resources due to the familiarity existing

amongst members who are motivated well to successfully accomplish task (Beal et al., 2003). Higher social unity teams performed quite well on mental and physical jobs, and also obtaining higher team performance scores (Jordan et al., 2002). Team members with higher team spirit (cohesion) were suggested to be more willing and committed to accomplish work better for the team, which results in greater performance (Hackman, 1987). Whereas “loosely knit” teams are deficient of motivation to work together, cohesive teams ably improve team performance (Man and Lam, 2003). Previous research has summed up team cohesion to be certainly connected to the overall performance of the team but also may fluctuate as project is phasing with the lower unity at the conclusion phase (Yang and Tang, 2004). Then again, ambiguity in substantially present of the association existing in team unity and how well the team is doing (Stogdill, 1972; Beal et al., 2003). For that matter, team cohesiveness is expected to positively affect team efficiency.

2.4.1.2 Like for each other

The theory of similarity-attraction poses that there is substantial correlation between similarities in individual demographic characteristics and interpersonal attraction (Byrne, 1971; Liden et al., 1993). Liking is an individual desirability which therefore inspires participants to continue with the team (Cartwright, 1968; Burgoon and Ruffner, 1978). The more teams spend substantial time in the initial on interpersonal relationships, the greater the efficiency of the team (cited in Samson and Daft, 2003).

Previous research indicate that when members like talking to one another at the initial stages of group development, discourse their individual goals, and know one another, they do build a communal benchmark of reference which improves ability to handle difficulties (Samson and Daft, 2003). Liking enhances member interactions (Williams,

2001; Jackson et al., 2003), and also encourages practical experience distribution (Bunderson, 2003). The members of the project team are often cooperative and more open if they feel that they are part because awareness enhances confidence (Ensley et al., 2001) which results in additional cohesion amounting to greater job output (Hare, 2003). Previous research submit that similarity, especially value similarities, and liking for each other are positively related (Dose and Klimoski, 1999), and also the greater the member's magnetism to teams, the more the liking rating is optimistic (Koomen, 1988; Bettenhausen, 1991).

Then again, cohesiveness is evaluated as the liking that members have for one another (Carless and Paola, 2000). It therefore suggests, in tandem with literature that members liking one another leads to a more cooperative and open teams accruing in greater team performance.

2.4.1.3 Agreement on goals

Sharing the goals of the team encourages the team members achieve those goals whilst lessening goal conflict (Larson and LaFasto, 1989; Locke and Latham, 1990). Goal approval could be boosted by team members' partaking in developing goals (Steven and Campion, 1994; Pearson, 1987) these often results in clarity of objective and team efficiency at higher level (Hoegl and Parboteeah, 2003) in terms of accurateness, supply of service or quantity (Guzzo and Dickson, 1996). It has also been suggested that construction teams with higher goal approval likely show greater output (Bettenhausen, 1991), produces a team uniqueness that is highly operative for project team performance (Burgoon and Ruffner, 1978), and also the dedication of members to the goal of team absolutely relate to team performance (Evans and Dion, 1991). It is also revealed that agreement on common goal positively affects team effectiveness (Guzzo and Dickson, 1996).

Goal contract produces team uniqueness that is operative for performance, and therefore, arrangement on goals is anticipated to positively relate with team performance.

2.4.1.4 Clarity of Roles

Project teams that are well developed often have member roles and mutual expectations are clearly defined which helps in stabilizing inside direction (Molleman et al., 2004; Choi, 2002). Clarity of role is perceived to be a principal anxiety in project teams (Betts, 2005; House et al., 1996) and as participants execute functional duties good (Driskell et al., 1987) greater performance of the team would be achieved (Pfeiffer, 1994). It has been submitted that clarifying the team member's roles is a crucial feature of great project team performance (Burgoon and Ruffner, 1978). The team participant really appreciate their responsibilities and roles and complement each other (Kaye, 1994), team members are often more cohesive and supportive (Bass, 1980) which meaningfully result in greater team efficiency (Bradley et al., 2003; Woodcock and Francis, 1996). If team role independence is great, the participants use the opportunity to develop new roles and also form individual task which in turn touches how well the team is doing (Molleman et al., 2004).

Then again, ambiguous roles break relationships, leading to work being neglected as someone else is expected to do it (Kaye, 1994). Role uncertainty produces pressure and creates struggle of member roles (Samson and Daft, 2003), multiplies tautness and lessens output (Levine and Moreland, 1990) and also subsequently influences the performance of project teams (Salas et al., 1999). Clarity of roles lessens the urgency of internal coordination, upsurges cooperation and cohesiveness. Therefore, clarity of member roles is expected to relate positively with project team performance.

2.4.1.5 Role satisfaction

Roles are described to be the set of behavior anticipated of individual project team members (Samson and Daft, 2002). When project team members accomplish a complex

and hectic task or solve a problem to the benefit of others, there is the experience of a feeling of achievement, which is an inherent reward perceived to be. The fulfilment obtained in the course of undertaking the task is referred to as satisfying the role. These signals the realization of the need that tend to influence the members on their readiness to stay in team (Molleman et al., 2004). When project team participants exhibit the capability to undertake diverse roles, they often add up to team productivity and quality (Pfeiffer, 1994). Members attain intrinsic rewards if they ably accomplish a tedious assignment or solve a project problem to the benefit of others. Therefore, role satisfaction is expected to relate positively with project team performance.

2.4.1.6 Openness to change

It has been submitted that changes occur when specific project members admit the need to change and are driven by intrinsic and extrinsic reasons to change their manner of behavior. Project team members that accept change often interact with one another openly (Molleman et al., 2004) because they trust, commit to each other and cooperate well (Wheelan, 1999) resulting in highly operative job (Woodcock and Francis, 1996). Team members that are exposed to changes do enjoy experimenting new techniques for problem solving and fresh thoughts (Molleman et al., 2004). Project team members are extra operative at tasks if they open to changes and appreciate investigating with fresh plans, techniques and ideas of problem solving. Therefore, ability to open to receive change is expected to relate absolutely how well the project team is performing.

2.4.1.7 Openness to differences

Individual variances in attitudes, beliefs and/or values can be lessened by improved honesty to feelings, readiness to receive varieties and ideas (Stevens and Campion, 1994; Bass, 1980). If the project team participants are exposed to the variances amongst one another, they will often actively take part in team objectives and also open to consistent

response, resulting in greater team project (Wheelan, 1999). Being opened to difference encourages appreciating of communal goals and objectives, minimizes conflicts (Ensley, 2001) and enhances more effective and efficient reply to opportunities and threats (Woodcock and Francis, 1996). In opinion of previous studies that the honesty of members to one another's variances facilitates a more excellent reply to opportunities and threats, Openness to differences expectedly will positively relate to project team performance.

2.4.1.8 Division of works into sub-teams

Sub-teams are created to help members in acquiring fresh and diversified skills as well as properly share information. The sub-team members are then carried back into original greater groups to enhance communication within the team (Hare, 2003). The partition and simplification of task clearly define the expertise, authority and responsibility, promotes best performance of project teams (Steward and Barrick, 2000) and the effective management of specialization and efforts redounds to increased efficiency of teams (Burgoon and Ruffner, 1978). It has been submitted that finding members who can effectively work together produces team success (Levine and Moreland, 1990; Harrison and Connors, 1984). Project teams are often started with like members (Fontana, 1985; Levine and Moreland, 1990) and/or with related processes and/or expertise that yields more effective job with similar effort invested (Samson and Daft, 2003).

More then, teams with diverse membership have also as spectrum of capabilities (Guzzo and Shea, 1992) and these heterogeneous abilities are matching, the project team will possible attain greater performance (Stevens and Campion, 1994). On the other hand, when sub-groups are not willing to compromise and/or when tasks are undertaken without first checking the consistency with group and informing them, the division of task and sub-team process could negatively affect performance (Wheelan, 1999). The sharing of labour with very pure definition of expertise, power and duties promotes optimum performance of

project teams. Therefore, the creation of sub-teams with task specifications is expected to positively relate with project team performance.

2.4.1.9 Participative Leadership style

Participative leadership has been described as when the leader seeks the suggestions, opinions and also encourages member participation in decision making. If all the project team members are involved in decision making, the varied perspectives ensures more accuracy in difficult analysis (Stevens and Campion, 1994; Levine and Moreland, 1990). If duty independence is great in project team participants ably contribute to teams through the roles they perform which enables members to shape their efforts (Molleman et al., 2004). A participating headship approach endows the participants with authority and also joined the team rightly (Choi, 2002), encourages and generates team spirit (Osterloh and Frey, 2000).

Member participation in decision making of project teams increases commitment which tends to improve the performance of teams (Bettenhausen, 1991; Jackson et al., 2003). Meta-analysis findings reveal the positive relationship between team performance and participative leadership style (Lam et al., 2002; Cohen and Bailey, 1997) and also participating management approach correlates with the length of leader-member association (Somech, 2003).

Team participants' active partaking heightens their dedication to the objectives of team and subsequently result in greater performance. Therefore, participative leadership style of teams is expected to positively relate to team performance.

2.4.1.10 Goal motivation

When team members mutually share responsibilities for tasks, they might face challenges which therefore, motivates team members to realize how well the team is performing.

However, team tasks ought to be harmonized in goal concerned mode (Osterloh and Frey, 2000). Research has submitted that goal encouraged members of teams often attain goals and objectives, and subsequently obtain higher performance (Beal et al., 2003).

However, the team members ought to be accorded recognition for individual contributions lest the members will be demotivated to contribute earnestly to the performance of the team (Weingart and Weldom, 1991). Goal motivated teams do attain greater achievement (Beal et al., 2003). Therefore, goal incentive of teams is likely to positively relate with team performance.

2.4.1.11 Informal leadership roles

When project team members assume leadership duties at different stages, times and ways, the team characterizes executing project team (Katzenbach, 1997). When team independence in decision making is put in the hands of members (Guzzo and Dickson, 1996), the existence of the propensity of leaning to casual leadership which impacts abundant effect even though there is a officially chosen team manager (Neubert, 1999; Hackman, 1992) since informal leaders undertake team tasks that formal leaders couldn't undertake (Hackman, 1992) or serves as an different for formally designated leaders (Kerr and Jermier, 1978).

Research has indicated that informal headship impacts performance of teams (Neubert, 1999) through assisting and expediting the processes of the teams and also accomplishing the needs of members (Luft, 1984). Informal leadership fulfils the members' needs when the formal leadership fail such responsibilities. Therefore, informal leadership roles are expected to positively relate to project team performance.

2.4.1.12 Intra-team conflict

The need to control intra-team conflicts successfully and efficiently to mitigate team matters rightly (Ilgen, 1999; Sims, 1995). Intra-team conflicts are perceived to be vital

team process variable that serves as an intermediary between previous circumstances of team behavior and consequences (Jehn, 1997, Gladstein, 1984). There is a relationship between intra-team conflicts and diversity (Tsui et al., 2002) and if teams properly manage such conflicts, they likely work more productively (Alper et al., 2002). Least conflict levels is associated positively with greater project team performance (Devine et al., 1999).

Inequity amongst team participants strongly associates with intra-team conflicts, and is fundamentally dealt with using the avoidance tactics (Bettenhausen, 1991). Avoidance of conflict has cultural value and is valuable inside collectivist spheres (Boisot and Child, 1996; Trompenaars, 1993). In collectivist spheres, avoidance of conflicts is important in generating positive relationship which is of high value (Tjosvold and Sun, 2002; Ohbuchi et al., 1996).

More also, high task conflict levels impact the standard of work and subsequently affect project team performance negatively (Jehn, 1995). Intra-team conflicts correlates damagingly with unity but with time, it results in entrenched bitterness and avoidance (Ensley et al., 2001). It has also been indicated that intra-team conflict is not critically related to whole project efficiency (Yang and Tang, 2004). In the communist spheres, intra-team battles are circumvented altogether. Dependent on how inter-personal relationship behave has been emphasized. Therefore, intra-team conflict is expectedly supposed to relate negatively to overall team performance.

2.4.1.13 Cliques

Cliques produce ineffective communication in large teams and indistinct objectives (Mc David and Harari, 1996; Bass, 1980) resulting in participants isolating from the team (Bass, 1980; Bass and Tyterband, 1978). Cliques and alliances is adversely influenced if members are not willing to compromises and/or when activities are carried out deprived of informing or inspection the whole team (Wheelan, 1999). Sub-grouping is potentially dangerous and

also impacts project team effectiveness and moral. Subgroups lead overall team to unproductivity or perceived lose/win situations.

Even though subgroups are easily identified, delineating the causal motivation of the members is very problematic. It is a anxiety when subgroups develop habitually, with similar “out teams” and “in teams” or if sub teams obstruct the project team as a full (Robson, 1995). Subgrouping is opined to be associated with inter-team battle but that might always not be the situation as social variety redounds on how well the team perform (Hogg et al., 2004). If teams perceive dispute as a norm requiring communal solutions, the exchange of subgroup diverse perspectives and ideas are seen in the positive, lessening inter-team conflicts (Alper et al., 2000). If the sub teams integrate well with entire project group, it is regarded as constructive corporation (Wheelan, 1999).

Conversely, cliques are a concern if subgroups perceive themselves quite otherwise and not as subsets of the entire project team (Robson, 1995). The creation of cliques do influence team members’ behavior and values. Therefore, subgrouping is expected to negatively relate to project team performance.

2.4.2 STRUCTURAL FACTORS

The structural characteristics represent the manner in which the teams are dynamically constituted to function properly. Team size has been regarded as an “input” that influences team behavioral and performance outcomes (Gist et al., 1987; Hare, 2003).

Some other studies also submitted that team size does affect project team performance (Bettenhausen, 1991; Taggard and Brown, 2001).

Team construction is perceived to be an “input” into team behavior (Gist et al., 1987). Team structure is defined in relation to team type, size, goal setting, organizational size and management support.

2.4.2.1 Team size

There is no globally standardized meaning for the constitution of an effective and efficient team size in research. For instance, a “small team” has been considered as from 3 to 5 memberships, whilst a “big team” is from 8 to 12 members (Hare, 2003). The best size of project team for efficient problem solving is 5 to 6 members (Bass, 1980). The optimal size of project teams is dependent on the relationship between complexity, number of knowledge domains needed for success in accomplishing tasks and also information (Nunamaker et al., 1989 cited in Valaciah et al., 1995). It was also submitted that a team with member magnitude of 8 to 10 is associated with best efficiency. Team size influences how well its perform (Bettenhausen, 1991; Taggard and Brown, 2001), member number enhances effectiveness (Valaciah et al., 1995) and influences the team member interactions because greater teams potentially create more cliques which causes trouble in interrelating with one another (Lincoln and Miller, 1979; Mayhew and Levinger, 1976). The size of team controls the quality and nature of group discussions (Burgoon and Ruffner, 1974). Then again, team size negatively relate to the efficiency and effectiveness of sub-teams. This has been attributed to “social loafing” and “free riding” (Gist et al., 1987). The size of the project team relies on the task at hand as the complexity of the task will determine how many engineers, quantity surveyors, architects or project managers are needed on board (Hare, 2003).

Larger teams are also seen to be beneficial for project teams and management settings (Kozlowski and Bell, 2003). It was discussed that the optimal team size varies across the type of team setting since it hinges on the objectives and responsibilities of teams (Steward, 2006). Then again, larger team sizes are perceived to be dysfunctional because the size could obstruct proper member coordination (Gladstein, 1984; Campion et al., 1993), minimizes involvement of memberships in decisions (McGrath, 1984; Campion et al.,

1993) and lessens cohesion leading to the upsurge of battles (Wheelan and McKeage, 1993).

Team members ought to be minimal to be able to perform the task (Sundstrom et al., 1990; Campion et al., 1993). Lesser teams are very favorable for higher output (Bass, 1980), which results in greater performance of project teams (Stevens and Campion, 1994). Optimal size of team hinges on knowledge fields, drive, task complexity and duties. Hence, the size of team is expected to negatively relate to project team performance.

2.4.2.2 Team types

The need for team classifications has been recognized in research to aid the organization and discussions of team conclusions (Devine et al., 1999; Guzzo and Shea, 1992). Teams are classified into four categories, viz; ad hoc production teams, ad hoc project teams, continuing production teams and continuing project teams. Team task on data handling i.e. scheduling, producing, selecting and determining, whilst production task attentive teams involves practical and psychomotor ability and/or synchronized and sequenced activities. Ad hoc groups created for a single job round which is extended period, current teams are incessantly allocated fresh tasks or they execute similar job in a recurring manner.

A Small Group Activity (SGA) involves an extensive diverse set of jobs, with a crossfunctional team participation in the design of product or operations problem answering (Hackman and Wageman, 1995). Ad hoc construction groups are also constrained in their timespan and are disbanded on the accomplishing of job (Guzzo and Dickson, 1996).

Quality Control Circles include all participants of teams in enhancing the excellence of teams and reduction of cost (Cheney, 1994; Guzzo and Dickson, 1996). Quality Control Circles often encounter on voluntary and consistent basis so to suggest, deliberate and

execute to enhancements construction processes in works and are hence perceived to be ongoing production teams (Mueller et al., 2000; Devine et al., 1999). Quality Control Circles are also seen to be “systemized” teams as a result of standardized work practices, discipline and expected behaviour of its participants.

Project team assignments are not repetitive by character and also involves substantial use of information, expertise and judgment; bring together members from diverse disciplines, specialized expertise and useful units (Cohen and Bailey, 1997). Ad hoc project groups do resolve difficulties of excellence, articulate strategic professional plans and also progress fresh outcome (Devine et al., 1999). Previous study has indicated that innovative projects definitely relate to performance in terms of quality (Keller, 1986 cited in Bettenhausen, 1991). Project teams are additional flexible, with fewer mechanical, technical, and workplace interdependencies, being least closely attached to organizations and possibly addressing unlimited spectrum of knowledgeable jobs

(Devine et al., 1999).

Departmental teams are usually perpetual useful groups, with group members carrying on board function knowledge (Samson and Daft, 2003). Cross functional teams or multiple departments are very common in project organizations (Devine et al., 1999).

Departmental groups are “individualized” teams due to the participant perspectives which have substantial effect on the overall project team performance (Woodcock and Francis, 1996).

It has also been suggested that the type of team actually moderates its performance such the production teams interaction with patrons, assembly of products and maintenance service for equipment or machinery in general (Devine et al., 1999). Ongoing teams which are entrenched in the structure of the organization are seen as costly to maintain with regards to planning, synchronization, selection and training. Matters that are regarded

critical for this type of teams include satisfaction of members, attitude, motivation, value similarity, cohesion, socialization, conflict resolution and norms (Devine et al., 1999).

It is observed from literature that the different team types work on differing difficulties and are therefore measured long-term or short term teams. Therefore, diverse types of project teams are anticipated to emphasis on diverse aspects of performance criteria of teams.

2.4.2.3 Organizational size

The size of the organization affects performance and corporate strategy since it has to do with capitals (Shrader and Simon, 1997, cited in Fernandez and Nieto, 2006). Teams that hands big project organizations do gather products or construct building structures using automated machinery or computer-controlled systems such as cranes for high rise buildings, which are monitored manually by the operators who receive training of a sort (Devine et al., 1999; Groover, 2002). Large organizations do train the team members on battle management abilities and do have counselors, which helps team members to study abilities or even “easy abilities”. Groups that has worked collected for long period and within great organizations have more potential to have excellence and experience abilities in the teams (Hartenian, 2003).

Small organizations are often family owned and are therefore quite flexible, somewhat rapid in making decision and also have superiority in the family. Though, personal objectives and business are usually united, which tend to affect business purposes (Davis and Tagiuri, 1991; Fernandez and Nieto, 2006). Minor construction establishments do dearth strategy formulation and management in such businesses (Tan, 1990). For instance, minor businesses often pay less attention to activities of the teams because they tend to be expensive in designing and implementing, and small organizations don't have access to high technology like the larger project organizations. Therefore, Team members in larger organizations are trained on team skills.

2.4.2.4 Goal setting

Goal setting enhances dedication to goals, and stimulating goals could produce high team excellence (Locke and Latham, 1990; Brown and Latham, 2000). Objectives do control member behavior and specific goals result in greater project team performance (Brown and Latham, 2000). Developing a goal is also seen as a motivational knowledge (Locke et al., 1981).

Goals do fit into the organizational hierarchical structure such that strategic goals are regarded to be top management responsibility and the operational goals are responsibilities of immediate supervisors and workers. Operational goals underlines the attainment of strategic goals that results in the achievement of strategic goals for the project teams. The goal setting process gives the team a sense of direction and also directs the effort of members towards vital outcomes. Team members do perform well when team tasks and goals appear expressive, challenging and interesting. Goal approval by the team is very crucial since the lack of unity in goals and objectives of teams and/or clarity dampens the performance of the teams (Stevens and Campion, 1994).

Team members who do set specific goals that are challenging and receive feedback will often develop a more appropriate means of achieving the task goals (Buller and Bell, 1986). Developing a goal is not the singular duty of supervisors but rather necessitates the teamwork and cooperation of the whole team throughout the process as managers and supervisors are not able to regulate the goal development procedure and quality of teamwork (Hoegl and Parboteeah, 2003). Teams with high cooperation levels between supervisors more likely trust the leader in goal accomplishment.

Goal setting positively relate with team performance in terms of the efficiency, effectiveness and quality (Ilgen and Klein, 1988; Sims and Lorenzi, 1992). Goal setting

becomes extra operative if it was done at the team stage (Hoegl and Parboteeah, 2003; O'Lear-Kelly et al., 1994). The knowledge of the team members with team tasks enhance the performance of teams if it's involved in tandem with goal setting (Dossett et al., 1979; Latham et al., 1978). Developing goal is connected to performance of team, and therefore, goal setting is expected to positively relate with project team efficiency and effectiveness.

Customer expectation of standard are included in team goals to uphold the authority of the customer. Teams ought to have flexibility and adaptability while promptly responding to the expectations of customers. Key performance indicators (KPI) of quality, service or product to the customer (clients) are often connected to the working goals. Teams that perform composite tasks ought always to pursue feedback from the clients so to regulate the offered duties in line with the clients' values (Choi, 2002).

Teams ought to be adaptable and flexible whilst replying to clients' expectation of quality and standards in general; therefore, goal influence by the customers (clients) to overall team goals is anticipated to positively relate to performance.

2.4.2.5 Management support

Previous research indicates that the management of large organizations should give pure route and sufficient material resource to help teams achieve (Goodman, 1986; Hackman and Walton, 1986, cited in Samson and Daft, 2003). Teams tend to be highly productive if members acknowledge that the higher administration backing them. The constructive connection existing between management and teams increases team performance. The management could vary in it dedicated to the teams (Carew et al., 1986; Kormanski, 1988).

Revels of achievements augments team cohesiveness and standards, and are signals of administration backing (Woodcock and Francis, 1996). In the opinion of previous findings

that teams tend to be more productive if members sense management provision, management support is expected to positively relate to team performance.

2.4.2.6 Training

Training that is important to team skills will absolutely affect the performance of the teams (Guzzo et al., 1993; Hartenian, 2003). Training will enhance skills and make available practical flexibility to come across the intensity and dynamics of work (O'Reilly, 1992).

Training facilitates members to interrelate in a more effective and efficient way, cooperate and coordinate with one another in team's problem-solving, managing conflicts and facilitation of team's performance (Stevens and Campion, 1994).

Members' creativity and knowledge often ensures open communication which subsequently results in advanced stages of project team performance and satisfaction (Molleman et al., 2004).

Poor team abilities will generate conflict (Ayoko et al., 2002). The continuous exercise helps team members improve performance. Hence, training is expected to positively relate with team performance.

2.4.3 DEMOGRAPHIC CHARACTERISTICS

It has also been suggested in research on the existence of a connection with team's demography and performance (Eisenhardt and Schoonhoven, 1990; Michael and Hambrick, 1992). To control this link between team's demography and performance, this study examines gender, tenancy of memberships, age, level of education, previous management capability and the experience of the team in general.

Team members are distinguished one from another in accordance with the demographic characteristics including, ethnicity, age, sex and socioeconomic origins. Demography does influence the interaction amongst team members (Lincoln and Miller, 1979; Tsui et al., 2002). A person's competition, education, sex and race do affect perceptions, status, social

experience and attitudes (Hambrick and Mason, 1984; Pfeffer, 1983). Project team participants who possess identical demographic features do treat favourably each other and also promote social identity, whilst members with dissimilar demographic profiles treat one another with less favour (Tsui et al., 2002). Gender composition has also been found to promote and influence emotional conflicts, and also impact performance of the project team (Pelled, 1996; Rentsch and Klimoski, 2001).

Theorists concerned primarily with social identity have submitted that people divide themselves based on a sense of belonging to different or same social groups. People perceive team members of the same social group to be more cooperative and attractive due to the similarities in their demographic profiles (Tsui et al., 2002). As the members of the team stick together for long durations when working, they are bound to become very familiar with one another, identify the similarities amongst, and are extra consistent (McGrath, 1991, cited in Sosik and Jung, 2002). This research explores the various team features that are associated with the construction project teams.

2.4.3.1 Age

Industries, such as construction, that do depend heavily on innovative technologies do employ young people who are more educated and with high expertise (Tsui et al., 2002). Members of similar ages more likely possess identical work attitude, and have higher emotional team conflicts (Pelled et al., 1999). The grown-up team members who are more than or equal to 36 years are more satisfied with the members of the team (Tsui et al., 1992). A Malaysian research indicated that conflict handling ability and behavior are affected by age of members (Wafa and Lim, 1997). Newer participants of teams in Malaysia are required to give due respect to the mature participants (Asma, 1992; Wafa and Lim, 1997). Confrontation of older members of teams or “the power figures” is disallowed (Kirkman and Shapiro, 2001).

Age difference has an effect on the excellence of member relationships (Tsui et al., 2002). Grown-up participants are esteemed and honoured for their age. Hence, older members are anticipated to practice less inter-team conflicts.

2.4.3.2 Gender

The arrangement of gender in project teams do disturb the awareness of performance and quality (Karakowsky et al., 2004). Teams with increasing feminine membership face challenges in working together, experience greater levels of tension and competition; have worse cooperation and efficiency levels (Gist et al., 1987) The gender arrangement of project teams with 30% or more males performed lesser whilst teams with 30% or more females indicated higher performance (Knouse and Dansby, 1999).

It has been asserted that there is little or no literature connecting team efficiency and behavior to female susceptibilities or argue the gender distribution process of team's talent dynamics (Metcalf and Linstead, 2003). Gender roles stereotypes, especially in the construction industry that is mostly dominated by males, do disturb the moods, perceptions and behavior of such team members and subsequently end up in subjective perception (Karakowsky et al., 2004). It was stated that literature on human resource management often theorizes firms as masculine and therefore with masculine behavior of teams (Dickens, 1988, cited in Metcalf and Lindstead, 2003). Men often perform task roles that suggest, offer opinions and shape relationships, and are also very task oriented (Taylor and Strassberry, 1986; Bettenhausen, 1991). Females enhance communication and participation on the other hand (Rosener, 1990). Project teams with more feminine members probably behave quite differently from the vice versa.

2.4.3.3 Educational levels

Project team members do acquire skills and expertise to effectively and efficiently perform tasks, and as such become effective members of the project teams (West and Allen, 1997;

Athanasaw, 2003). Education does influence the attitude and perception of project team members (Hambrick and Mason, 1984; Pfeffer, 1983). Team participants with advanced educational stages have broader spectrum of perspectives which adds to strategic problem solving, support one another, and possess social skills (Cohen and Bailey, 1997; Tsui et al., 2002). Education is a continual process and therefore the continuous professional development programs offered by the associated professional bodies do add to the perspectives and performance of the project team members from different professional backgrounds.

2.4.3.4 Team membership Tenure

The tenancy of teams relates to cohesiveness and enhances the effective performance of project teams (Cohen and Bailey, 1997, Hambrick and D'Aveni, 1992). Construction projects usually are construction within a limited number of years; when money and other resources are at hand, and so the teams are disbanded once the projects have been handed over to the project owner. Each time a new project comes up, it is very likely that new members may constitute this fresh team. Therefore, the team members are not able to work together for so long a time. Team tenure is a vital antecedent of teams that perform highly. As the team members work together more, they tend to become familiar with one another, identify similarities and develop additional interconnected (McGrath, 1991; Sosik and Jung, 2002). The time duration spent on task has a positive correlation with team skills possession as the norms of cooperation take a lot of period to advance (Chatman and Flynn, 2001; Hartenian, 2003). Team tenure affects positively the overall performance due to the fact that members who closely work together for long make more accurate decisions.

Members of teams with high hierarchical positions usually have longer tenure in the team/organization and do understand task processes better, and having the likelihood of taking informal leadership (Pfeffer, 1983; Neubert, 1999). The teams' opinions and views will possible be perceived extra positively by fresh participants (Tsui et al., 2002). If group

participants use extended tenures than the headship, the members will more likely to demonstrate less initiatives and participation (Tsui et al., 2002). Group participants with longer tenures in large organizations likely possess stronger conflict resolution skills, and also good at planning and goal setting (Hartenian, 2003). Longer tenure teams have a greater likelihood to develop common identity with good interaction between the participants.

2.4.3.5 Previous team experience

Members of teams with substantial earlier team knowledge tend to possess better skills in conflict resolution and problem solving which results in better performance (Hartenian, 2003). They also obtain the necessary capability to reach the project team goals successfully, and the team experience does influence goal setting and performance (Bandura, 1997; Hoegl and Parboteach, 2003).

Previous team experience ensures that the members work on a long term basis cooperatively. Members' expertise and competence could be boosted, saving time, as there will be no need to lay down operating guidelines and rules (Hackman, 1991; Pescosolidao, 2003). Then also, members without similar experience do have negative attitudes towards the associated teams (Bushe, 1987). Previous experience enhances the competence and expertise of members in problem solving and dealing with conflicts more effectively.

2.4.3.6 Past team leadership experience

The knowledge of expertise of team leader is perceived as an origin of "expert power" as they possess the ability of facilitating, formulating goals and promoting open discourses in the team (Taggard et al., 1999; Bunderson, 2003). They likely have effective behavior including collaboration and coordination of task and problem solving (Taggar and Brown, 2001). The uniqueness of the roles the project leaders play affects the performance of teams (Taggard et al., 1999).

Previous headship capability is of great benefit for project teams due to the fact that it enhance their ability to draw contingency plans and identify priorities (Hambrick and Mason, 1984). Team participants also with previous experiences do enhance the facilitation of open discussion.

2.4.3.7 Ethnic diversity

Culture is often described as the augmentation of believes, important morals, identity and behavior of a team (Hofstede, 1980). Cultural values start developing during early childhood. Differences in culture do influence the interaction of members, work orientation, the way work is carried out and team's cooperation (Hofstede, 1984; McCarrey, 1988; Smith et al., 1995; Ayoko et al., 2002). Team member differences in gratification and dedication are attributable to cultural standards (Dorfman and Howell, 1988, cited in Kirkman and Shapiro, 2001).

Cultural differential teams implement well in some areas of task since it is obvious changes in viewpoints whilst analyzing difficulties, resulting in high degree of accuracy in making conclusion (Watson et al., 1991, cited in Guzzo and Dicks, 1996). Organizations can ably accomplish cultural diversity through stressing the standards including esteem for team orientation and people that decreases the undesirable influence of the variety of the participants (Chuang, 2004). Multi-cultural task teams gives several diversity methods such as diversity in values (Hofstede, 1984; McCarrey, 1988). Cultural diversity influences the behavior of members and overall performance of teams (Kirkman and Shapiro, 2001; Thomas, 1999). Diverse backgrounds and opinions should be controlled and integrated effectively into teams so to enhance greater degree of uncertainty tolerance (Jehn et al., 1999; Hofstede, 1980).

2.5 TEAM EFFECTIVENESS

The need of an enhanced, more comprehensive view of team effectiveness has been in play for decades. From the start of the 20th century, technology, globalization and complexity of works have led to additional firms becoming conscious of the significance of comprehending team effectiveness with working environments. Once the teams and teamwork concepts are well-known, it is vital for the work teams to understand the ways to corporately work collected for effectiveness. Effective teams require continual checking of the situations of teams in order to guarantee that the team members can finetune participant's jobs with regards to each other and the projected goal.

2.5.1 Team effectiveness definition

It is essential to describe team effectiveness in order to enhance the knowledge of its concepts. Some of the common definitions include the following:

- Team effectiveness is defined in terms of employee quality of work life and high performance. This notion emerged from socio-technical theory that indicates technical and social structures should be optimized for effective teamwork (Cohen et al., 1996).
- It has also been defined as a matrix of performance with regards to outcome, and team's potential to produce and restore itself (Tannenbaum et al., 1996).
- It is also defined in terms of three aspects. In the first place, team performance is a function of the degree to which team's useful output attains the endorsement of clients. Secondly, dependent working refers to the degree to which team's interreliant on each other. Thirdly, the satisfaction of teams it the degree to which the project team is satisfied with its membership (Mohrman et al., 1995).

The descriptions stated above and such others incorporates team performance as a significant element. In most cases, the terms team performance and team effectiveness are

clearly distinguished nor defined well. Usually, when the teams arrive at their goals, they are regarded effective. It is however not very good to only conclude team effectiveness of the achievement of team goals whilst neglecting other surrounding factors. For a good instance, it has been suggested that achieving project's goals and objectives could be very deceptive and therefore not a good measure of project team effectiveness (Essens et al., 2005).

Team success is assessed for both effectiveness and performance since teams are only effective under certain congenial circumstances. Nonetheless, it does not assure that teams will be operational always in varying settings. For instance, a group that achieves its objectives might have failed in considering properly the stakes of other parties related to the project. Also, an effective project team could also fail to attain goals because the goals were basically unrealistic.

Team performance can thus be seen in terms of the implementation of an act, accomplishing something actually, or what is ensuing within the team; whilst effectiveness is attained upon achieving desired result, especially as seen after facts. Effective teams are believed to achieve great-end outcomes of project that matches or exceeds standards, and as a result, improves overall productivity (Henderson and Walkinshaw, 2002).

2.5.2 TEAM EFFECTIVENESS CHARACTERISTICS

The brain behind the effectiveness of teams is a team of people who work together in a systematic order can attain more than if individuals are working distinctly. A study conducted showed that team efficiency is vital to the attainment of milestones, project's goals and purposes that has been outlined by the owner's project requirements; whilst performance is closely related to the soundness with which the task and teamwork are executed (Henderson and Walkinshaw, 2002). Team performance is assessed with regards

to inter-team and intra-team productivities (Harris, 2008). Other research showed that the essential elements that produces team performance success encompasses the following (Kezsbom et al., 1989);

- The mission for working corporately
- Commitment, a intelligence of ownership and interdependence of each participant
- Dedicated to group benefits through answering problems and making group decisions
- Accountability as a necessary working unit

When teams apply these four rudiments indicated above, high-performing teams will be attained which will add up towards effective teams. Additionally, several studies have been undertaken to determine the elemental composition of successful and effective teams. The characteristics of effective teams include cohesion, focus, trust, interdependency and communications (Cleland, 1996). To attain successful project, each team requires to possess recognition, focus, structure, good communication and empowerment (Peters, 1988; Katzenback and Smith, 2003; Forsberg et al., 2005; Sundstrom et al., 1990). A modest orderly series of proceedings needed to attain team synergy and effective teamwork is shown below as (Covey, 1989):

RESPECT → TRUST → OPENNESS → SYNERGY = TEAMWORK

When members build on inter-member respect, trust will begin to develop quickly. Open communications are as a result of trust and will, and hence, leads to honest teamwork. In addition, Parker (2008) outlines twelve features of real teams, which is greater when participants play roles as high performing players.

Table 2.2: Effective team characteristics (Parker, 2008)

Characteristic	Description
Clear purpose	The mission, dream, aim, objectives of teams is outlined and approved by every team member. This constitutes the achievement strategy.

Informality	The climate is casual, relaxed and comfortable. There are no signs of boredom or obvious tensions.
Participation	There is much discourse about the tasks and all members are stimulated to participate.
Listening	The team participants make use of efficient listening skills and strategies including paraphrasing, questioning and summarizing for discussing ideas.
Civilized disagreement	Even if disagreements and conflicts persist in teams, they tend to be comfortable with it and give no signal of smoothing over, avoiding or suppressing the conflicts.
Consensus Decision	For vital decisions, the goal and objectives are extensive but not always undisputed consensus in the midst of exposed deliberation with everybody's opinion, and the prevention of easy compromises.
Open communication and trust	Members are free to speak out their perspectives of ideas that concern the tasks as well as the operations of the team, mediated by a high level of trust. Communication which can occur informally.
Strong roles and work projects	There are clarified prospects of the roles to be played by the team members in achieving the overall goal. When actions are taken, clear assignment of duties are made, approved and undertaken. Work is distributed fairly amongst the members.
Shared leadership	Even though a formal leader heads the team, leadership functions are somehow rotated with time, subject to the present conditions, the desires of the team, and the skills of members. The formally chosen leader models suitable conduct and assists in optimistic norms formation.
External relations	The team makes use of sufficient time to develop key external relationships, bringing resources on board, and building trustworthiness with the key stakeholders of the association.
Style variety	The team has a wide range of team player types, such as members that are more concerned about focusing on goal setting, task, processes, and other questions about the functioning of the team.
Self-assessment	Regularly, the group cease to evaluate how effective and what obstructions are intrusive with their efficiency.

The twelve feature indicated in the Table 2.2 above could be applied in diverse methods including assessing the current state, to find out about the strength and weaknesses of members, and to examine the project at the end and grow additional action plans to enhance the whole efficiency of the teams.

2.5.3 TEAM EFFECTIVENESS MODELS

Many researchers conducted on team effectiveness in diverse fields of teamwork, and as a result, team effectiveness models have been developed in order to properly assess teams.

The most common models indicated in this study focus on teams specifically, as the little literature on team effectiveness models for construction teams. Different studies have brought to light variable sets or constructs that are used to evaluate the effectiveness of construction teams (Guzzo, 1986; Hackman, 1987; Campion et al. 1993; Guzzo and Dickson 1996; Milosevic and Tugrul 1997; Werner and Lester 2001; English et al. 2004; Kirkman et al. 2004; Mannix and Neale 2005). This study consequently focuses on the variables indicated in the above studies to develop to determine the team effectiveness measurement variables.

The normative team effectiveness model emerged during the late 1980s and stresses on leverage points that researches and practitioners can engage to affect effectiveness of construction teams (Hackman, 1987). The input-process-output theory (IPO) predicts the input factors, including individual and team characteristics, functioning through moderators or mediators to affect outputs, including performance and satisfaction of the whole team (Salas et al., 2009). This models form part of a conglomerate of team effectiveness models developed in various studies to augment the proper assessment of team's effectiveness.

2.6 CONSTRUCTION PROJECT PERFORMANCE

Any distinctive construction project goes through three major process, viz; preconstruction phase, actual construction phase, and the post-construction phases. As the project moves through this stages, numerous activities are performed by the team to attain the desired objectives and output itemized by the clients. Hence, it is critical for project teams, to some magnitude, properly degree of how well all the activities or subactivities designated to sub-teams across the project length of duration are performing. The project performance is regarded as the output of the processes and well as the process presence (Bai and Yang, 2011). For the teams to be very operative, it is significant for the participants to

comprehend and approve the performance measurement indicators specified for such projects.

2.6.1 MEASURE

Project performance measurement studies was identified in literature to be widely conducted by various researchers across decades. Different measures of project performance have been identified throughout this duration to comprise schedule, project cost and quality ((Ashley et al. 1987;

Barkley and Saylor 1994; Navarre and Schaan 1990; Walker 1995 and 1996; Hatush and Skitmore 1997; Belassi and Tukel 1996; Atkinson 1999). The three indicators of performance are also referred to as the tangible construction project aspects (Riggs et al., 1992; Freeman and Beale, 1992). Further, there are additional important aspects that should be added to the three listed tangible performance measures. It has been suggested that soft measures should be included in the performance measures (Ashley et al., 1987; Pinto and Pinto, 1991). The examples of soft or non-tangible measures comprise team members' performance and customer (project owner) satisfaction. Several more aspects than these have also been added, which includes, safety and health, user anticipation, functionality and environmental performance (Chan and Tam, 2000). Moreover, another aspect identified in literature to be of great essence in performance measurement of project teams is construction change management (Construction User Roundtable, 2005). The manner in which teams deal with variation orders, services linked to changes and cost monitoring, quality, schedules related to change are critically determined on the projects.

2.6.1.1 Project cost

Project cost is a very used to performance measure in the construction industry. The project teams are continually looking for ways and means by which the project could be completed within the specified budget to prevent any financial failure on the side of the client. The project team's ability to finish project within the budgeted cost is challenging, since the

project processes and durations are encompassed with various uncertainties which trigger change orders throughout the project. Cost measure can be described as extent to which the overall circumstances enhance the accomplishing of project tasks within the budget estimates (Bubshait and Almohawis, 1994). Project Costing is measurable subject to the calculation of cost variance between the budgeted cost and actual completion cost of the project.

2.6.1.2 Project schedule

Project duration or schedule is consistently practiced as a means for measuring project performance. Owners and stakeholders perceive project duration to be their preeminent criterion for project success measurement (Lim and Mohammed, 1999). If a project fails to finish up within the time schedule predesigned for the project, it implies that it didn't run smoothly as expected. The construction project duration could be opined to be the timeframe from the project inception to the completion and closing of project i.e. from preconstruction stage to post construction stage.

2.6.1.3 Project phases and task

A typical construction project is made up of the pre-construction, actual construction and the post-construction stages. Across these stages, various tasks are undertaken, from the field to the commissioning of the completed structure to the client. It is significant that the project tasks are undertaken throughout the project length are in line with the owner's expectation and specification. The element of quality is key in every aspect of construction activities which acts as an assurance that the project attains the highest of standard the owner specified. Quality in the construction industry is described as the entirety of characteristics essential by a service or product to reach the satisfaction of a given need, and also the fitness of product for purpose (Parfitt and Sandivo, 1993). Even though quality measurement is subjective, it has been suggested that meeting technical requirement is one

quality element (Freeman and Beale, 1992). In addition, a completed project is supposed to be functional and this is precisely measured in terms of technical requirements attained and quality (Chan and Ho, 2001).

2.6.1.4 Owner satisfaction

Satisfaction is viewed as one of the many attributes of project success (Liu and Walker, 1998). This element is on the non-tangible aspect of construction project performance measures. It is vital for the client to be satisfied with the commissioned project and even with the construction processes, as this serves as an indicator on the performance of the project team. The owner attains satisfaction if the delivered quality of work at least meets or even exceeds the initial expectations. The ability of the team to finish up project on the satisfaction of the owner's expectations do increase the reputation of the project team also result in the grounding of project relationship for long a time.

2.6.1.5 Project change management

Change has been stressed to be inevitable in project and sometimes very desirable to bring project to desired effect. It may usually predict and decide on time and cost overruns. The effect of variations associated with construction projects may come in any form; changed project information, changed communication, rearranged work methods, accelerated measures, intermittent cash flows, protracted costs and time, decrease in workers' morale and increase in waste. Hence, the effective application of project change direction practices could elevate how well the team would performed.

It is required for the project teams to adopt an effective change management system that properly coordinates the project leading to success. All differences from specifications and contract drawings must be noticed and well noted for project authorization and management and technical endorsement. Subsequently, the change orders should cover

other aspects, including quality, safety and schedule consideration as well as the impact of change on cost.

2.6.1.6 Project team

The mortal issue is one other aspect of significance in determining the project outcome. The quality of project depends largely on the knowledge, skills and experience (KSA) of team leader, who is often the project manager; managerial system (making decisions, setting up objective specific to the project, approving the correct strategy, selecting the right people, delegating duties to subordinates, and finally evaluating the results); and the construction process engaged to deliver the project successfully (Takim et al., 2003). It is also indicated that project teams' motivation, participation, consistency, capability and adaptability augments the teams' effectiveness which greatly contributes to project success (Ashley et al., 1987). The client will usually chose reputable members for teams; who possess substantial technical skills and knowledge related to the performance of construction jobs; and with a trustworthy in the industry. Hence, it is good for the project group to be grounded on respectable work integrity and nice working relationships in the teams.

2.6.1.7 Project safety

The concern of health and safety in the industry has soared high in importance, and therefore, could not be looked down on. It is easy within the team's greatest benefits to guarantee that the construction processes are at zero accident probability. The emphasis of health and safety on construction sites is usually found during construction stage, because this stage contributes to greater percentage of all accidents. It has been defined that safety and health refers to the extent to which general conditions enhance the accomplishment of project task in the absence of major injuries or accidents (Bubshait and Almohawis, 1994). Safety is usually analyzed by the extent and number of accidents and events on

construction sites. If a project gained zero accidents, it has performed well on safety management practices as well as proper safety records documentation.

2.6.2 ASSESSMENT AND EVALUATION

As shown in the literature, several performance measures of teams do exist for gauging project success level. Team members and management usually use these measures as assessment tools to enable them know how to maintain project team's effectiveness level. The performance valuation is usually evaluated and the outcome got is transferred back to project teams' members for a managing approach. Assessment and evaluated could be executed many times throughout the whole span of the project to guarantee that team members' identified weaknesses or loopholes could be improved to enhance the successful delivery of project. The assessment and evaluation of performance process helps to find issues associated with the implementation of projects, delineating the reasons behind the issues and correcting such mistakes in the exercise within period to enhance the performance of management in construction projects (Bai and Yang, 2011).

2.7 Chapter Conclusion

This chapter has dealt with two major objectives of the research; assessing the team characteristics of project teams in the construction industry, and also determining the performance of the construction teams based on the variables for measuring team performance. This therefore paves the way for the next chapter which delineates exactly how the objectives are going to be achieved.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter includes the techniques adopted in conducting this research which is one of the vital areas to carefully consider for achieving the research aims successfully (Naoum,

2001). Undertaking research through the choice of a suitable techniques do help the effort of the researcher to reduce the errors of the research and also to define the links between different measures and approaches (Marczyk et al., 2005). The choices of best appropriate and suitable study method would be subject to the kind of the issues at hand or the identified problem of research, capability of those undertaking the research, and the study environment.

Hussy et al., (1997) affirmed that some researchers use the terms ‘methodology’ and ‘method’ interchangeably. However, Mason (2002) splits ‘the impression of methodological strategy’ from method, while asserting that a specific method is a part of the methodological strategy. In light of these, the approach taken in this research was to contain all aspects of the research process under the whole methodology. Therefore, the study design, the method taken, the scheme of data collection methods, method of respondent’s selection, the selection of the sample size and the analysis of collected data, are all considered to be part of this research’s methodology.

3.2 DATA COLLECTION METHOD

To accomplish the objectives of the study, well-structured close-ended questionnaires were designed to collect data from construction project consultants and contractor on ongoing and newly completed projects in the tertiary institutions in Ashanti region. There are no bias in the phrasings and the questions give out various options which gave the respondents the chance to give their ideas by way of selecting from the choices provided. The questions were ethical and feasible consisting of seventeen (17) questions covering respondents profile, project team characteristics and project performance measures factors. Close-ended questionnaires were used as it is stress-free for respondents to response and also helps researchers analyze their data easily (Glasow, 2005).

3.3 QUESTIONNAIRE CONTENT

The information sought was divided into three sections:

Section (A):- Respondent's personal / company's details (e.g. job title, kind of project they are involved, working experience in the industry number of projects finished within the last 5 years and value of projects completed within the last 5 years.

Subheading (B):- Common Characteristics of Construction Projects in Ghana (respondents were asked to tick the boxes that matches with the team characteristics experienced in your latest team(s), with parameters defined as; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree). Project performance measurement (Task, cost, safety, change management, schedule and overall satisfaction) and how they lead to effective construction project teams were also handled same.

Section (C):- Asked about the actual overall duration and proposed duration of current/ last project undertaken, budget and actual project cost, number of variation orders issued and it causes. The questionnaire included two types of questions. Close-ended questions, were used in questions number 1 – 8 and 11 - 17. Question number 10 and 11 were five point Likert scale questions of which respondents were asked to tick the eighty (80) Common Characteristics of Construction Projects in Ghana and forty (40) Project performance measurement factors were identified through extensive literature review.

3.4 RESPONDENTS

The technique adopted for the selection of the Construction consultants or contractors on ongoing and newly completed projects in the tertiary institutions in Ashanti region to answer the questionnaire was purposive sampling. This technique was used due to the fact that, it permits the researcher to select the specific professionals who are well versed on the subject in discussion (Erbil et al., 2010).

Construction consultants and contractors were targeted since, they have the broadest experience in the construction industry, and they have worked in various project teams and are part of the several project stages that is planning, design, and construction. Again, ongoing and newly completed projects were designated so that current data could be collected; the data can easily be accessible from working team when the project is in progress in order to study and interrogate other related issues, and not rather from a disbanded team. Tertiary institutions were also chosen due to the fact that sources of funds for their projects and the kind of building structures constructed are similar and these help put them on the same platform for discussion.

3.5 SAMPLE SIZE SELECTION

Due to the constraints of time, the targeted population was consultants and contractors ongoing and newly completed construction projects in the tertiary institutions in Ashanti region. The tertiary institutions (both public and private) registered and accredited by Ghana National Accreditation Board were eleven (11). The sample frame was the list of consultants' team members and contractors/ representative obtained from the selected institutions which represent the population.

3.6 DISTRIBUTION AND COLLECTION OF DATA

The process of preparing, distributing and collecting data can be termed as data collection. The purpose of this process is to acquire data to preserve on, to make conclusions about important issues, and to pass on evidences to others. The questionnaires were sent out and collected personally where advantage was taken to have a field survey to ascertain the project team profile on the site and how Construction

Professionals (Project Manager, Architects, Quantity Surveys, Civil Engineers and Contractor) corporate, relate and work effectively as a team. This created opportunity to interview some of the professionals. Ahadzie (2007), advocated that reasons for

administering questionnaires in person are as follows; first, to ensure the questionnaires gets to the planned receivers and secondly, high rate of response is assured. The entire respondents were given the opportunity to response the questions since they were carefully prepared to asked simple, straight forward questions without any doubt. The duration of which the respondents were to answer the questionnaire were one week maximum. Seventy (70) Questionnaires were administered and 64 were retrieved for analysis as indicated on table 3.1

Table 3. 1 List of respondents

Item	Name of Institution	No. of Consultants Team members	No. of Contractors/ Representative	Total	Remarks
1	Kwame Nkrumah University of Science and Technology	4	5	9	In-house consultant/ project team
2	University College of Education, wenniba – Kumasi campus	3	4	7	In-house consultant/ project team
3	Kumasi Polytechnic	5	4	9	In-house consultant/ project team
4	Christ Apostolic University College	1	2	3	Private Consultant
5	Christian Service University College	3	3	6	Private Consultant
6	Garden City University College	2	4	6	Private Consultant
7	Ghana Baptist University College	2	3	5	Private Consultant
8	Kessben College	2	3	5	Private Consultant
9	Presbyterian University College	2	3	5	Private Consultant
10	Spiritan University College	1	2	3	Private Consultant
11	St. Margaret University College	3	3	6	Private Consultant

	TOTAL			64	
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3.7 DATA ANALYSIS

Descriptive statistics was chosen to analyze the data in order to achieve the research goals of this study. The two main categories of questions asked in the questionnaire are Close ended questions which require options to tick by the respondents and Itemizing rating list questions.

The collected data was edited, sorted, coded and analyzed using statistical package for social sciences (SPSS) to obtain the importance index. A correlation analysis of factors was also established to determine which factors correlated with each other such that a change in one will affect the other. The use of importance index also helped in establishing the significant importance of a list of identified factors that constitute the measuring project team performance. The data analysis was presented in the form of texts, frequency tables, bar charts, pie charts and the like. The Importance index is calculated as used by (Adnan et al 2007) using the formula below:

$$\text{Importance index (I.I)} = \frac{5n^1 + 4n^2 + 3n^3 + 2n^4 + n^5}{5(n^1 + n^2 + n^3 + n^4 + n^5)}$$

Where:

n^1 = number of respondents replied “Strongly disagree”

n^2 = number of respondents replied “Disagree” n^3 =

number of respondents replied “Neutral” n^4 = number

of respondents replied “Agree” n^5 = number of

respondents replied “Strongly agree”

3.8 CASE STUDY

Yin (2003) argues that a case study is appropriate for the explanatory phase of an investigation. A case study inspects current events, especially when the relevant behavior of the occurrence being studied cannot be manipulated, as it can in experiments. A case study gives detailed information and better insight of the subject matter but it is difficult selecting representative cases and difficult to generalized outcome.

A case study approach was identified to be the most appropriate methodology to achieve the research objective three which is to measure the performance of Ghanaian construction teams using the project performance measures. Construction of 5 storey SRC hostel block was selected for the study. This was selected because the project is a newly completed complex structure and access to project information. Also the project is for one on the tertiary institution in Ashanti region. This is to collect the data required for in-depth study and analysis. The purpose of the case study approach was to obtain data from the source documents of the newly completed project to find out whether the team is performing according to the defined standard. The source documents included the contract documents, variation orders documents, contract drawings and valuation and payment certificates etc. The intent is to determine the level of performance of construction project team by using the identified standards. A case study has two sources of evidence: direct observation and systematic interviewing (Azmy, 2012).

This case study adopted the approach as suggested by Trochim (2005), that qualitative data can be classified into three types, listed as follows:

1. Detailed interviews: The types of interviews used was single interviews which recorded using audio recording and written notes. It was conducted to analyze the thoughts of the interviewees on the aim of the study.

2. Observation: Observation was carried out to ascertain the team profile, nature, relationship and work environment by taking records, photographs and field research during the site visit.
3. Analysis of documents and texts: the Project documents, such as contract document, contract drawings, minute books, variation orders, certificates, reports, etc., were used in assessing the level of performance of project team.

3.8.1 MEASURE OF PERFORMANCE OF CONSTRUCTION PROJECT TEAM

Measures, or “yardsticks,” are used to determine how well each variables are performed comparing to the standards. (WCPS-UK, 1998). Criteria are therefore, points or ranges on the “yardstick” that define performance at various specific levels of the criteria. Each one of the elements and their related measures and standards can help determine the level of project team performance.

Determining whether the performance of project team is a success or a failure is highly complex (Chan et al, 2002a). However, to measure the level of performance of Ghanaian construction project team for the selected project, weightings were assigned to the seven (7) identified team performance measurements factors which were ranked from objective two of this study.

In determining the weighting for each of the factors, the first ranked factor was assigned with a value of 7, followed with 6 for the second ranked and continue to the seventh ranked with a value of 1. The sum of the values were done. By using the principle of ratio and proportion, each weighting were calculated by dividing the each by the total ratio.

The indicators under each of the seven (7) variables were rated as per the selected project the performance of the project team with marks of 1 being “poor performance”, 2 being

“fair performance, 3 being “average performance”, 4 being “good performance and 5 being “excellence performance”. The sum of variables under each factors were computed and results multiply by its corresponding weighting. The summation of the seven variable would be computed and the average of all the project members would be the level of performance of the construction project team for the selected project.

CHAPTER FOUR

4.0 PRESENTATION AND DATA ANALYSIS

4.1 INTRODUCTION

This chapter describes analyses of the data collected and discuss the results to response the objectives fixed to achieve in these research. The objectives set to achieve were to identify typical Ghanaian construction project team characteristics and to determine the constituents for measuring project team performance from the perspectives of project team members. The research further expounds on the profile of the respondents, the responds rate and identified the typical Ghanaian construction project team characteristics, the factors that influences determine the constituents for measuring project team performance. The data obtained from the survey were analyzed using descriptive statistics.

4.2 RESPONSE RATE

Seventy (70) survey questionnaires were administered to the consultants and contractors of ongoing and newly completed projects in the tertiary institution in Ashanti region so as to assess the performance of Ghanaian construction project team and Sixty – four (64) questionnaires were retrieved and deem fit for analysis representing 91.43%.

4.3 PRESENTATION AND DESCRIPTIVE ANALYSIS OF DATA

(DEMOGRAPHIC)

This segment of the questionnaire involved questions demanding personal information to provide detailed respondent characteristics (Figure 4.1 to 4.4). This was aimed to understand the background of the respondents so that respondents view can be put on a common platform for discussion and analysis. Data in this section included: type of organization, the kind of organization, types of projects engages in, number of people averagely in project management team, Job title, gender, years of project experience in the industry, number of major individual projects have you undertaken in the last 5 year and value of projects executed within the last 5 years.

4.3.1 TYPE OF ORGANIZATION RESPONDENTS REPRESENT

From **Figure 4.1**, the total number of questionnaires received were sixty-four (64). 4 (i.e. 6.3%) of the respondents represented owners, 42 representing 65.6% were consultants and 18 representing 28.1% were contractors. There were not any missing response recorded. The data shows that majority of the respondents were consultants.

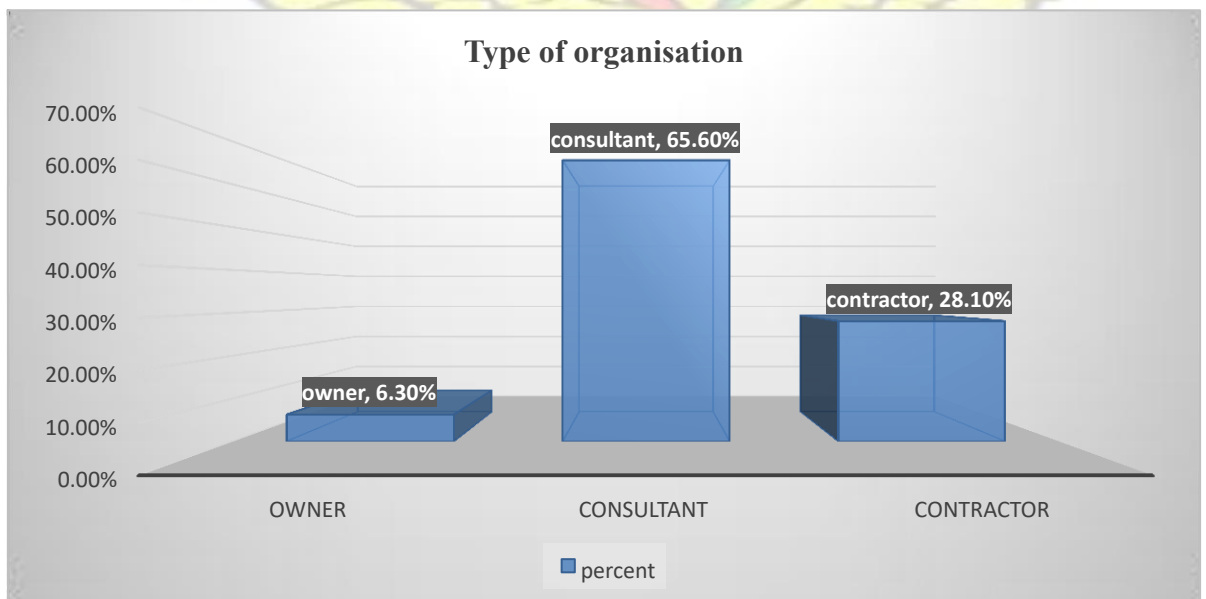


Figure 4. 1 Type of organization

4.3.2 RESPONDENTS TYPES OF PROJECTS

From **Figure 4.2**, majority of the respondents were practicing as building contractors. 78.1% constituting 50 of respondents practiced building construction, water and sewage constituted 4 respondents with a percentage of 6.3 whiles 9 representing 14.1% worked in the roads and transportation. One of the respondents undertook projects not listed above.

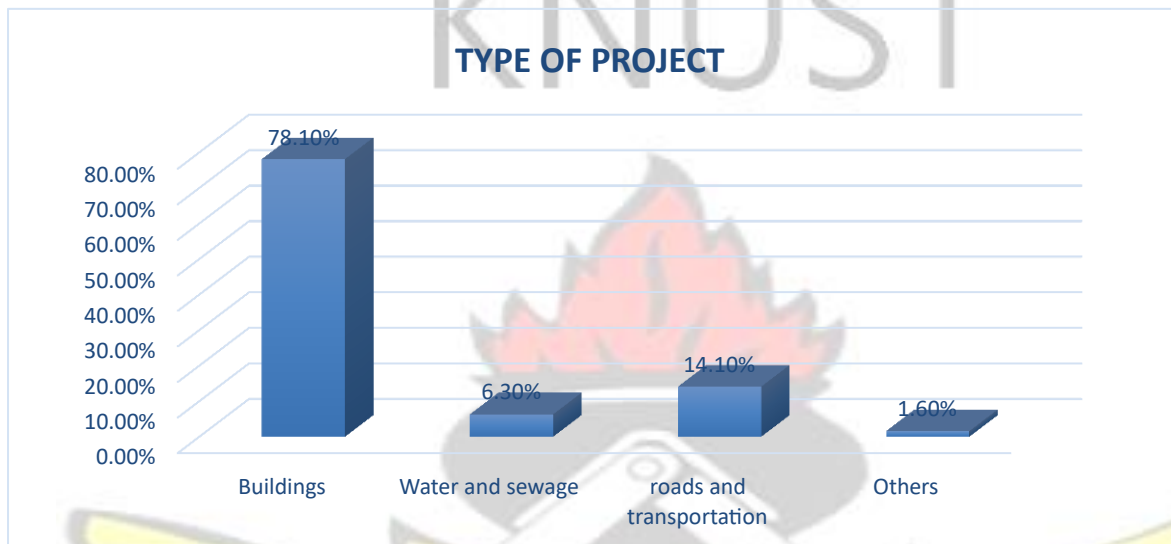


Figure 4. 2 Type of project

4.3.3 NUMBER OF PROJECT TEAM MEMBERS

From **Table 4.1**, 39 of the professionals were in project teams constituting four to six members. 15 (23.4%) of the respondents were in project teams made up of seven to nine members. and Project teams of 10 and above members were a few and that constituted 6.3%. Majority of the respondents were with teams of 4 -6 hence will be able to give an adequate perception of the team characteristics and the effectiveness of the teams based on project performance measures.

Table 4. 1 Number of members in a Team

<i>Number</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Valid percent</i>	<i>Cumulative Percentage</i>
1-3	6	9.4	9.4	9.4
4-6	39	60.9	60.9	70.3

7-9	15	23.4	23.4	93.8
10 and above	4	6.3	6.3	100.0
Total	64	100.0	100.0	

4.3.4 RESPONDENTS JOB TITLE

Respondents were asked to indicate their professional background or job title. From **Table 4.2** below, the results show that 14 (21.9%) of the respondents were Project directors. This shows the level of knowledge about team characteristics and the effectiveness of the teams. 20.3% which constituted 13 respondents were Chief project managers/architects/engineer. Out of 64 responses, 16 (25.0%) were Assistant Chief PM/Architect/Engineer. Sub-Contractors constituted a percentage of 12.5. 20.3% of the respondents were from other professions like Accountants, Directors, Managers, Chief executive officers, etc of which they were clients to the ongoing or newly completed construction projects.

Table 4. 2 Job Title

<i>Respondents Job Title</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Cumulative Percentage</i>
<i>Project director</i>	<i>14</i>	<i>21.9</i>	<i>21.9</i>
<i>Chief PM/Architect/Engineer</i>	<i>13</i>	<i>20.3</i>	<i>42.2</i>
<i>Assistant Chief PM/Architect/Engineer</i>	<i>16</i>	<i>25.0</i>	<i>67.2</i>
<i>Sub-Contractor</i>	<i>8</i>	<i>12.5</i>	<i>79.7</i>
<i>Others</i>	<i>13</i>	<i>20.3</i>	<i>100</i>
Total	64	100.0	

4.3.5 RESPONDENTS GENDER

From **Table 4.3**, the total number of questionnaires received were sixty-four (64). 42 (i.e. 65.6%) of the respondents being males and 21 (i.e. 32.8%), being females. This explains

that about more than half of the respondents were males and just a few were females. This also testifies to the fact that even though there are a lot of males practicing the construction management profession than females, the number of female professionals in the industry are growing. There was one missing response recorded.

Table 4. 3 Respondents Gender

<i>Respondents Gender</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Valid percent</i>	<i>Cumulative Percentage</i>
<i>Male</i>	<i>42</i>	<i>65.6</i>	<i>66.7</i>	<i>66.7</i>
<i>Female</i>	<i>21</i>	<i>32.8</i>	<i>33.3</i>	<i>100.0</i>
<i>Total</i>	<i>63</i>	<i>98.4</i>	<i>100.0</i>	
<i>No response</i>	<i>1</i>	<i>1.6</i>		
<i>Total</i>	<i>64</i>	<i>100.0</i>		

4.3.6 YEARS OF EXPERIENCE

Figure 4.3 shows the total number of years respondents have been practicing in the construction industry. 13 respondents constituting 20.3% of the total responses have been with construction industries for five years or less, 27 (i.e. 42.2%) of the respondents have been practicing in the construction industry from five to ten years, 19 (29.7%) have also been practicing with project teams for 10 – 15 years, and 5 constituting 7.8% has practiced in the Ghanaian construction industry for more than fifteen years.



Figure 4. 3 Years of Experience

4.3.7 INDIVIDUAL PROJECTS UNDERTAKEN WITHIN THE LAST 5 YEARS

From **Table 4.4**, the number of professionals who had undertaken projects between 1 to 10 were 39. 19 (29.7%) of the respondents had undertaken projects between 11 to 20. and the number of professionals undertaken projects above 20 were a few and that constituted 9.4%. Majority (more than half) of the respondents were with teams who had undertaken projects between 1 and 20 and will be able to give an adequate perception of the team characteristics and the effectiveness of the teams based on project performance measures.

Table 4. 4 Individual projects undertaken

<i>Number</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Valid percent</i>	<i>Cumulative Percentage</i>
<i>1 to 10</i>	39	60.9	60.9	60.9
<i>11 to 20</i>	19	29.7	29.7	90.6
<i>Above 20</i>	6	9.4	9.4	100.0
<i>Total</i>	64	100.0	100.0	

4.4 TEAM CHARACTERISTICS PRESENT IN CONSTRUCTION PROJECTS IN GHANA

4.4.1 FACTOR ANALYSIS FOR ENABLERS VARIABLES

In respect to the extensive number of dependent variables (that is, 80 enablers of common characteristics of teams) involved in this study, there is the possibility that some of the variables will result in the same or similar underlying effects. It is therefore necessary to adopt a data reduction technique, namely Factor analysis to establish the variables might be determining features of the same primary dimension. Bestowing to field (2005), Ahadzie (2007), factor analysis is suitable for discovery bunches of correlated variables and the perfect for decreasing a large number of variables into a well manageable framework. On another platform factor analysis is a statistical method that shows a way of shortening a data that are in original variables into a lesser set of dimensions (factors) with a least loss of data (Hair et al., 1992).

4.4.2 Initial Considerations

Factor analysis is reliant on the relationship matrix of the variables in it and the associations frequently need a big size sample before they stabilize. Consequently the dependability of the factor analysis is also dependent on the sample size. As a rule of thumb, a bare least of 10 comments per variable is essential to evade computational problems (DeCoster, 1998). In SPSS, a convenient option was presented to find out if the sample is largely sufficient: the Kaiser-Meyer-Olkin quantity of specimen sufficiency (KMO-test). Literature recommends that the value of the KMO value must be greater than 0.5 (Field, 2005; Child 1990), thus sample is sufficient if the amount of KMO is more than 0.5. In reference to the data presented in **Table 4.5**, the data from the survey for the enablers of Management innovations is adequate by these tests.

Table 4. 5 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.

.580

2339.223

Bartlett's Test of Sphericity	Df	Approx. Chi-Square	1225
		Sig.	.000

4.4.3 Data Screening/Preliminary Analysis

When conducting factor analysis it is routine to firstly glance at the inter relationship among the variables. In reference to the correlation matrix, two issues are vital: the variables should be intercorrelated, but not extremely relate (extreme multicollinearity and individuality) as this would create difficulties in finding out the exceptional influence of the variables to a factor (Field (2005)). In SPSS the Intercorrelation is checked by using the KMO test and Bartlett's test of spherity, while multicollinearity is detected via the cause of the correlation matrix.

The KMO statistic differs between 0 and 1. A value of 0 point to that the sum of fractional correlations is big comparative to the sum of correlations, showing dispersion in the design of correlations (hence, factor analysis is likely to be unsuitable). A value close to 1 shows that designs of correlations are comparatively dense and so factor analysis should yield distinct and reliable factors. According to Hutcheson and Sofroniou (1999), cited in Field (2005), values ranging from 0.8 and 0.9 are great. From **Table 4.6** factor analysis is appropriate for the enabler's data.

Bartlett's quantify the tests of null hypothesis that the unique correlation matrix is an identity matrix. For factor analysis to perform, relations among variables are needed and if the R-matrix were an identity matrix then all correlation coefficients would be zero. So, the craving is for this test to be important (i.e. have a significance value less than 0.05). A significant test tells us that the R-matrix is not an identity matrix; therefore, there are some relations among the variables we hope to include in the analysis (Field,

2005). From **Table 4.6**, Bartlett's test is highly significant ($p < 0.001$), and therefore factor analysis is suitable. As noted earlier the determining factor of the matrix is useful in testing for multi collinearity or singularity. The determinant or the R-matrix should be greater than 0.00001. From Field (2005) if it is less than this value then variables that correlate very highly ($R > 0.8$) should not be included in the analysis. The determinant of the correlation matrix for the challenges of innovative financing of infrastructure projects variables is less than 0.00001, ($6.17E-005$). According to Field (2005), mild multi collinearity is not a problematic for factor analysis, and hence the data is appropriate for factor analysis.

After fulfilling all the essential tests of dependability of survey instrument, sample size adequacy and population matrix, the data set was exposed to factor analysis using principal component analysis (PCA), with Varimax rotation. Preceding to principal component analyses, the communalities involved were initially determined. The communalities demonstration the number of the difference in the variables being accounted for by the extracted factors and is very valuable in deciding which variables to finally extract. As indicated in **Table 4.6**, the average of the communalities of the variables after withdrawals was above 0.60. Out of the Eighty (80) variables, Fifty (50) were found to be above 0.6 and thirty (30) were below 0.6.

Table 4. 6 Communalities

Characteristics	Initial	Extraction
Strong team spirit	1.000	.794
Affection between team members	1.000	.848
Understanding each other's point of view.	1.000	.799
Individual determination to accomplish	1.000	.784
Firm establishment of member's roles at the inception stage	1.000	.799
No damaging of personality.	1.000	.764
The team is open to new ideas and is constantly improving.	1.000	.744
Members rarely express disagreement with initial group goals.	1.000	.794

Members challenge the leader's ideas.	1.000	.727
Team members aimed in achieving its goals successful	1.000	.792
Effective use of time.	1.000	.729
Enforcement of team structure and discipline	1.000	.734
Personal safety is the utmost concern.	1.000	.780
Discussion and brainstorming of team goals.	1.000	.817
Team like each other's company, and are effective	1.000	.836
Team cohesiveness.	1.000	.783
Good understanding of each other's abilities.	1.000	.829
Clarity of Team Goals	1.000	.800
The roles and tasks given to individual according to abilities, and not by external status or first impressions.	1.000	.735
Characteristics	Initial	Extraction
Team Cooperation	1.000	.783
Team innovation.	1.000	.850
Conformity of thinking and behaviour	1.000	.741
Provision of direction and encouragement from team leader.	1.000	.710
High commitment to team goals and tasks	1.000	.696
Team's objectives are achievable	1.000	.758
Efficient division of labour within the team	1.000	.820
Members are concerned with their acceptance and inclusion in the team.	1.000	.792
Adequate team planning for work done.	1.000	.720
Ability to addressed barriers and difficulties.	1.000	.756
Member's contentment with each other.	1.000	.803
Understanding each other's values and beliefs.	1.000	.654
Member's agreement on team's goals.	1.000	.833
Ability to accommodate changes of roles and tasks to achieve the team's goals.	1.000	.737
Power conflicts between team members.	1.000	.783
Team receives and gives feedback of information	1.000	.780
Strong pressure to conform to team norms	1.000	.735
Members agreement with the leader ideas	1.000	.889
Lot of team drive.	1.000	.781
Striving high performance	1.000	.759

Subgroups are integrated into the team as a whole	1.000	.559
Fear of rejection by other members of the team	1.000	.692
Team member satisfaction	1.000	.830
Likeness and respect for each other	1.000	.807
Members of the team know each other very well as people	1.000	.802
Team members share the same goals	1.000	.705
Conflict of differences in value	1.000	.702
Inward looking and resistance to change	1.000	.753
Differences of opinions are encouraged	1.000	.818
Cohesion and commitment to the team	1.000	.795
Strong motivation of team members.	1.000	.810

Extraction Method: Principal Component Analysis *Table 4. 7 Total Variance Explained*

Component	Extraction Sums of Squared			Rotation	Sums of Squared Loadings	
	Loadings					
	Total	% of Variance	Cumulative %		Total	% of Variance
1	12.202	24.404	24.404	10.128	20.256	20.256
2	5.012	10.023	34.427	3.205	6.410	26.665
3	3.785	7.569	41.997	2.750	5.501	32.166
4	2.393	4.787	46.784	2.699	5.397	37.564
5	2.041	4.082	50.866	2.268	4.537	42.100
6	1.984	3.968	54.834	2.216	4.432	46.532
7	1.953	3.907	58.741	2.214	4.428	50.960
8	1.659	3.318	62.059	2.158	4.315	55.276
9	1.484	2.967	65.026	2.135	4.270	59.546
10	1.463	2.927	67.953	1.934	3.868	63.413
11	1.306	2.611	70.564	1.842	3.684	67.097
12	1.160	2.320	72.884	1.764	3.529	70.626
13	1.086	2.172	75.056	1.694	3.389	74.014
14	1.012	2.024	77.080	1.533	3.066	77.080

Extraction Method: Principal Component Analysis

4.4.4 CHARACTERISTICS OF TEAM MEMBERS

Both the Guttman-Kaiser rule and the Cattell scree test were adopted in determining the quantity of factors to take out. Guttman-Kaiser rule recommends that only those factors with an eigen value greater than 1 should be retained, whilst the Cattell scree test suggests that all other components after the one beginning from the elbow should not be involved. Applying these criteria on **Table 4.8**: the number of principal components to be extracted suggest that 14 components should be extracted for the characteristics of team members.

Table 4. 8 Table Rotated Component Matrix

Characteristics	Component													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Understanding each other's point of view.	.82													
Team cohesiveness.	.6													
Adequate team planning for work done.	.82													
Team Cooperation	.2													
Likeness and respect for each other	.76													
Good understanding of each other's abilities.	.7													
Strong team spirit	.76													
	.3													
	.75													
	.2													
	.75													
	.2													
	.74													
	.3													

Efficient partition of labour within the team	.65	9													
Lot of team drive.	.65	0				.45	9								
Affection between team members	.61	9								.39	4				
Inward looking and resistance to change	.60	9												.36	6
No damaging of personality	.60	4								.31	9				
Openness to new ideas and constant improvement	.59	7	.42	3											
Characteristics	Component														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Firm establishment of member's roles at the inception stage.	.59	6						.34	4						
Striving for high performance	.59	4				.55	5								
Provision of direction and encouragement from team leader.	.59	3				.47	1								
Clarity of Team Goals	.56	6						.37	8						
Conformity of thinking and behaviour	.54	0				.31	8	.49	5						

[illegible]

Team's objectives are achievable	.67	.38	
	1	0	
Team members aimed at achieving its goals successful	.61	.53	
	6	3	
Team members share the same goals	.77		
	7		
Members challenge the leader's ideas	.30	.65	
	2	9	
There is strong pressure to conform to team norms	.53	.56	
	4	7	
Members are concerned with their acceptance and inclusion in the team	.42	.52	
	7	7	
			.30
			8
Members agree with team's goals		.86	
		4	
Team innovation.	.63	.51	
	7	4	

Characteristics	Component													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ability to accommodate changes of roles and tasks to achieve the team's goals.					.43								.38	9
					2									

Team member satisfaction	.40				.77
	7				4
Duties are given based on capabilities not by external position or first impressions	.33	.30	-		.50
	8	2	.32		7
Team recognize members very well					.83
					6

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 24 iterations.

4.4.5 COMPONENT 1

Twelve (12) factors happened to conveniently fall under this component; Understanding each other's point of view., Team cohesiveness, Adequate team planning for work done, Team Cooperation, Likeness and respect for each other, Good understanding of each other's abilities., Efficient partition of labour within the team, Affection between team members, Lot of team drive., No damaging of personality, Understanding each other's values and beliefs, Cohesion and commitment to the team. All the above factors seem to talk about relating with team members effectively by knowing and understanding all members very well in order to work effectively with each other to achieve success. The common name for component 1 is Good working relationship among team members.

4.4.6 COMPONENT 2

Seven (7) factors occurred to conveniently fall under component two; Fear of rejection by team members, Members agreement with the leader ideas, Strong motivation of team members, Power conflicts between team members. Personal safety is the utmost concern, Members challenge the leader's ideas, Strong pressure to conform to team standards. The factors under component two can commonly be call Concern for team members because taking good care of the team members would go a long way to reduce conflict, rejection, etc.

4.4.7 COMPONENT 3

With this component, six (6) factors fall conveniently under it; Enforcement of team structure and discipline, Members are concerned with their acceptance and inclusion in the team, Team members aimed at achieving its goals successful, Team's objectives are achievable, High commitment to team goals and tasks, Openness to new ideas and constant improvement. This factors commonly talks about the need to successfully achieve the teams' objectives through structures, discipline, commitment and openness for constant improvement. This can be achieve by putting in place good motivation system. Therefore, the common name for component three (3) is Effective motivation systems for team members.

4.4.8 COMPONENT 4

Three (3) factors happen to fall under this component; Team members share the same goals, Personal safety is the utmost concern, and members challenge the leader's ideas. The common name is Concern for each other member of the team since being concern for each other would make us share in the team goal and will be others keeper.

4.4.9 COMPONENT 5

The factors that fall under this component was three (3) and are: Member's agreement on team's goals, Ability to accommodate changes of roles and tasks to achieve the team's goals, Team's objectives are achievable. This factors commonly discussed about setting, agreeing, accommodating and achieving team goals. Therefore, it would be call setting of achievable goals for the teams.

4.4.10 COMPONENT 6

One factor fall under component six (6); thus, Subgroups are incorporated into the team. There are a lot of activities under which each professional needs the service of other group of people in the same profession. Creation of subgroups aid in timely delivery of designs or documents. Therefore, the same name is given to this component.

4.4.11 COMPONENT 7

Two (2) factors has fall under this component; Member's contentment with each other, Team innovation. Hence, the common name is team innovation since motivation is a key for driving a team to success.

4.4.12 COMPONENT 8

Two (2) factors were fallen under component 8; Individual determination to accomplish, Effective use of time. Hence, component 8 shall be call Individual determination to accomplish since making effective use of time occur when there is a desire to finish successfully.

4.4.13 COMPONENT 9

The factors that fall under component 9 are two (2); Ability to addressed barriers and difficulties, Understanding each other's values and beliefs. The common component 9 name is Understanding each other's values and beliefs, since this will help in addressing any barriers and difficulties in the team.

4.4.14 COMPONENT 10

Only one (1) factor fall under this component; thus, Expression of disagreement with initial group goals. Therefore, it stands as the components name.

4.4.15 COMPONENT 11

One (1) factor fall under this component; thus, Discussion and brainstorming of team goals. Hence, it stands as the components name.

4.4.16 COMPONENT 12

Factors that falls under component 12 are two (2); Team like each other's company and are effective, Variances of views are encouraged. Variances of view are encouraged is selected as component name since, liking each other's company will promote variance of options in the team.

4.4.17 COMPONENT 13

Factors that fall for component 13 are two (2); Team member satisfaction, Duties are given based on capabilities not by external position or first impressions. So, Team member satisfaction is selected as common name for this component since, satisfaction would be achieved if duties a shared according to team members professional capabilities.

4.4.18 COMPONENT 14

One (1) factor fall under this component 14; Members of the team know each other very well as people. Hence, it stands as the components name.

4.4.19 COMPONENT NAME AND ITS CHARACTERISTICS OF TEAM MEMBERS

The following are the common name given to the various characteristic/ factors that fall conveniently under each of the Fourteen (14) components;

COMPONENT 1	Good working relationship among team members.
COMPONENT 2	Concern for team members because taking good care of the team members
COMPONENT 3	Effective motivation systems for team members.
COMPONENT 4	Concern for each other member of the team
COMPONENT 5	Setting of achievable goals for the teams.
COMPONENT 6	Subgroups are incorporated into the team
COMPONENT 7	Team innovation
COMPONENT 8	Individual determination to accomplish
COMPONENT 9	Understanding each other's values and beliefs
COMPONENT 10	Expression of disagreement with initial group goals
COMPONENT 11	Discussion and brainstorming of team goals
COMPONENT 12	Variances of view are encouraged
COMPONENT 13	Team member satisfaction
COMPONENT 14	Members of the team know each other very well as people

4.5 FACTORS THAT CONSTITUTE PROJECT TEAM PERFORMANCE

Table 4.9 displays different aspects of project performance measurement (Task, Cost, Safety, Change management, Schedule and Overall satisfaction) arranged in a descending order (from the most strongly agreed indicator to the least strongly disagreed indicator) with respect to the results from the data analyzed.

Using the likert scale, “strongly disagree” which was ranked 1, “disagree” ranked as 2, “neutral” as 3, “agree” as 4 and “strongly agree” as 5. Any ranking that has it indicator having a mean of 2.5 or below is identified as not agreed to and mean above 2.5 is marked as respondents strongly agreeing to the factor that leads to effective construction project teams. From the **Table 4.9**, forty (40) factors were identified as performance measurement indicators to effective team performance. Since they all had a mean score of 2.5 and above it shows that all factors identified were really leading to the effectiveness of project teams.

Top ten project performance measurements to effective team performances are; 1. Preparedness to work together another time with the team members, 2. Timely project inspection, 3. Effective communication with the client, 4. Project Quality assurance, 5. Well-managed and documented Safety record keeping and reporting, 6. Contractor showed good technical capability on the project, 7. Project construction completed correctly, 8. Project team members showed capability required for the project, 9. Effective Project planning, 10. Professional and skilled people were employed for the project.

Table 4. 9 Project Performance Measurement

Project performance measurement	Mean	Standard Deviation	Rank
OVERALL SATISFACTION			
Project completed to meet the quality standard specified during the earlier stage.	4.08	0.599	12
Project team exercise effective documentation system	4.08	0.625	14
Project team successfully achieved the project objectives.	4.02	0.549	18
Satisfaction of final product of the project.	3.89	0.715	25
Project site kept clean and well organized.	3.77	0.831	30
PROJECT PHASES AND TASKS			
Timely project inspection	4.22	0.766	2
Project Quality assurance	4.20	0.739	4
Project construction completed correctly.	4.17	0.606	7
Effective Project planning	4.09	0.706	9
Quality Project designs	4.08	0.719	16
Time for design delivery	3.84	0.781	27
PROJECT SCHEDULE			
Consideration of unforeseen physical and weather in project schedule.	3.92	0.741	24
Regular review of master schedule and Monitoring of Critical milestones.	3.81	0.852	28

Adjustments to maintain or improve the schedule.	3.75	1.098	31
Demonstration of sense of urgency	3.73	0.627	32
Project completion	3.55	1.097	35
Regular preparation of Reports and documentation.	3.53	0.992	36
PROJECT COST			
Continuously monitored of Overall project costs	4.09	0.868	11
Continuously monitored of project costs	4.00	0.816	20
Project completed within budget.	3.52	1.098	37
Contractor seek alternative solutions for reducing cost.	3.43	1.132	38
CHANGE MANAGEMENT			
Change control systems was well-managed by the project team.	4.00	0.617	19
Project flexibility to accommodate the changes	3.95	0.722	23
A defined change control system was used for the project.	3.59	0.988	34
Decisions to rework were based on cost not value of work.	3.28	1.266	39
Project has no deficiencies during construction.	3.23	1.294	40
PROJECT SAFETY			
Well-managed and documented Safety record keeping and reporting	4.17	0.631	5
Excellent efforts were made to establish effective safety procedures.	3.97	0.776	21
Inspection of Project safety are effectively managed.	3.97	0.563	22
Safety is clearly a priority in this project.	3.89	0.737	26
Establishment of specific safety goals.	3.80	0.760	29
Project team reports accident statistics to me on a regular basis.	3.67	0.818	33
TEAM MEMBERS' PERFORMANCE			
Preparedness to work together another time with the team members.	4.34	0.511	1
Effective communication with the client	4.20	0.540	3
Contractor showed good technical capability on the project.	4.17	0.606	6
Project team members showed capability required for the project.	4.16	0.597	8

Professional and skilled people were employed for the project.	4.09	0.706	10
Good service of the contractor was demonstrated during the project.	4.08	0.599	13
Rapid responds to provide professional service.	4.08	0.697	15
Team members had pleasant atmosphere and trust.	4.08	0.789	17

4.5.1 MAIN FACTORS OF PROJECT TEAM PERFORMANCE MEASUREMENT

Table 4.10 shows the main factors that constitute project performance arranged in a descending order (from the most strongly agreed indicator to the least strongly disagreed indicator) with respect to the outcomes gotten from the data analyzed. From the **Table 4.10**, Seven (7) factors were identified as performance measurement indicators to project team performance measurement. The first factor was the Team member performance with a mean score of 4.141, which shows that the performance of the construction project teams members determines how the successful the intended project would be, followed by Project phases and tasks aspects of 4.102 mean value, Overall satisfaction of 3.966, as indicated.

Table 4. 10 Main factors that constitute project team performance

<i>Team Performance Measures</i>	<i>Mean</i>	<i>RII</i>	<i>Rank</i>
<i>Team members' performance</i>	<i>4.151</i>	<i>0.830</i>	<i>1st</i>
<i>Project phases and tasks</i>	<i>4.102</i>	<i>0.820</i>	<i>2nd</i>
<i>Overall satisfaction</i>	<i>3.966</i>	<i>0.793</i>	<i>3rd</i>
<i>Project safety</i>		<i>0.782</i>	<i>4th</i>
<hr/>			
	<i>911</i>		
<i>Project cost management</i>	<i>3.759</i>	<i>0.752</i>	<i>5th</i>
<i>Project schedule</i>	<i>3.715</i>	<i>0.743</i>	<i>6th</i>
<i>Change management aspect:</i>	<i>3.613</i>	<i>0.723</i>	<i>7th</i>

4.6 DURATION OF CURRENT/LAST PROJECTS

The duration of the projects tells how long teams have stayed together and actually worked together. The longer the project durations the more likely it is to showcase actual characteristics of team members. From **Table 4.11**, the least number of professionals who are involved in projects that have lasted for a short period are 9 and the projects lasted for just 6 months which is even quite long enough to establish certain behaviours of project team members.

Table 4. 11 Duration of current or last project

<i>Duration</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Valid percent</i>	<i>Cumulative Percentage</i>
<i>0-6 months</i>	<i>9</i>	<i>14.1</i>	<i>14.1</i>	<i>14.1</i>
<i>6-12 months</i>	<i>16</i>	<i>25.0</i>	<i>25.0</i>	<i>39.1</i>
<i>12-18 months</i>	<i>19</i>	<i>29.7</i>	<i>29.7</i>	<i>68.8</i>
<i>18-24 months</i>	<i>18</i>	<i>28.1</i>	<i>28.1</i>	<i>96.9</i>
<i>Above 24 months</i>	<i>2</i>	<i>3.1</i>	<i>3.1</i>	<i>100.0</i>
<i>Total</i>	<i>64</i>	<i>100.0</i>	<i>100.0</i>	

4.7 NUMBER OF VARIATION ORDERS ISSUED WITHIN THE PROJECT

Variation orders can also be called as variation instruction or change instruction is a modification to the scope of works in a construction contract in the form of an adding, replacement or exclusion from the initial scope of works. Shortage of skilled personnel, poor workmanship, impediment to prompt decision-making process, change in specification by consultants and contractors are some causes of variations which emanates from bad team performance. The number of variation orders suffered by a project can inform the level of performance and quality of a project team. From Table

4.11, it is shown that there are a lot of defaults with building construction projects in the

Ghanaian Construction Industry looking the number of variations made to the buildings.
This can be attributed to the inability of project professionals to work together as a team.

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Table 4.

12 Number of variation orders

<i>Variation orders</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Valid percent</i>	<i>Cumulative Percentage</i>
<i>None</i>	<i>2</i>	<i>3.1</i>	<i>3.2</i>	<i>3.2</i>
<i>1 - 5</i>	<i>23</i>	<i>35.9</i>	<i>36.5</i>	<i>39.7</i>
<i>6 - 10</i>	<i>33</i>	<i>51.6</i>	<i>52.4</i>	<i>92.1</i>
<i>11 - 15</i>	<i>4</i>	<i>6.3</i>	<i>6.3</i>	<i>98.4</i>
<i>More than 15</i>	<i>1</i>	<i>1.6</i>	<i>1.6</i>	<i>100.0</i>
<i>No response</i>	<i>1</i>	<i>1.6</i>	<i>1.6</i>	<i>100.0</i>
<i>Total</i>	<i>64</i>	<i>100.0</i>	<i>100.0</i>	

4.8 CAUSES OF CHANGE ORDERS

Change Orders contractually alters an original agreement between the signed parties.

Perfect and unambiguous objectives promote a greater project team performance.

Adequate time should be taken to accurately plan your project's objectives through brainstorming and discussion of the team members, the jobs following these objectives are certainly produced. From the Table 4.12 Below it is shown that Inadequate Project objectives is the main cause of change order in the Construction Industry and this can result to claims and disputes when they are not properly addressed. Design errors and omissions was the second most common cause of Change Orders stated by the respondents. It is important that the scope of the work for the project be completely defined in the designs so that disagreements over order changes can be minimized. The above causes were followed by Conflicts in contract documents, Uncertain design details and Lack of contractor's involvement in design. All these are major causes to Change Orders and should be given attention because they can impacts on the projects schedule which can affect the contract duration.

Table 4.

13 Causes of Change Orders

<i>Causes</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Valid percent</i>	<i>Cumulative Percentage</i>
<i>Inadequate project objectives</i>	22	18.8	18.8	18.8
<i>Design errors and omissions</i>	17	14.1	14.1	32.8
<i>Conflicts between contract documents</i>	9	23.4	23.4	56.3
<i>Ambiguous design details</i>	8	23.4	23.4	79.7
<i>Lack of contractors involvement in design</i>	6	18.8	18.8	98.4
<i>Others</i>	1	1.6	1.6	100.0
<i>No response</i>	1	1.6	1.6	
Total	64	100.0	100.0	

4.9 INCIDENTS RECORDED ON PROJECTS

From Table 4.13 below, it is realized that First Aid and Workers compensation cases were recorded as the highest incidents in the Ghanaian Construction Industry with the same frequency of 15. Due to the nature of the industry, minor injuries do occur on the site and as such all construction project should have First Aid kits on the site and also each jobsite should maintain a first-aid log to record the nature and cause of injuries so future occurrence could be prevented. Organization and planning of the project is key in order to prevent the issues of compensation which can increase the total cost of the project. Near misses recorded 18.8% constituting 12 of the respondents. A “Near Miss” is any accident that could have resulted in any unexpected occasion that causes injury or ill health of

Table 4.

people, or destruction or loss to property, plant, materials or the environment. Near misses should be prevented on project sites. Lost workdays and OSHA recordable showed a percentage of 18.8% and 14.1% respectively.

14 Incidents recorded on projects

<i>Incidents</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Valid percent</i>	<i>Cumulative Percentage</i>
<i>Near misses</i>	12	18.8	18.8	18.8
<i>OSHA recordable</i>	9	14.1	14.1	32.8
<i>First Aid cases</i>	15	23.4	23.4	56.3
<i>Workers compensation cases</i>	15	23.4	23.4	79.7
<i>Lost workdays</i>	12	18.8	18.8	98.4
<i>Others</i>	1	1.6	1.6	100.0
Total	64	100.0	100.0	

4.10 MEASURING THE PERFORMANCE OF PROJECT TEAM IN THE SELECTED PROJECT

4.10.1 Introduction

To measure the performance of Ghanaian construction project teams using the project performance measures, Construction of 5 storey SRC hostel block was selected for the study. This project happens to be a newly completed residential building which is within its defects liability period. The project is five storey structure hostel facilitate for one of the tertiary institutions in Ashanti region. The project went through national competitive bidding according to the Public procurement act. Act, 663, 2003 of which seven contractors competed for the project. The project was funded by SRC Hostel Endowment

Table 4.

Fund. Six (6) experienced professional were put together to form the project team. They are Project Manager, Quantity Surveyor, Structural Engineer, Services Engineer, Geotechnical Engineer, Contractor and the client/ clients' representative. There were a lot of other professionals who were engaged to carry out with various duties concerning the execution of the project.



4.10.2 LEVEL OF TEAM PERFORMANCE

To measure the level of performance of Ghanaian construction project team for the selected project, weightings were assigned to the seven (7) identified team performance measurements factors which were ranked from objective two of this study as indicated in table 4.15

In determining the weighting for each of the factors, the first ranked factor was assigned with a value of 7, followed with 6 for the second ranked and continue to the seventh ranked with a value of 1. The sum of the values were done. By using the principle of ratio and proportion, each weighting were calculated by dividing the each by the total ratio.

To help measure the level of team performance, team members of the select project were interview and was allow to rate their performance of the team in terms of the Seven (7) indicators consisting thirty – five (35) variables with marks of 4 being “poor performance”, 8 being “fair performance”, 12 being “Average performance”, 16 being “Good performance”, 20 being “Excellence performance”. From table 4.16, it was realized that, the average rating of team members performance were 82%, followed by the overall satisfaction with 76%. On the other hand, the project team performed poorly on project cost management and schedules with both being 44%. Also, project change management recorded very poorly with 42%. This was as a result of numerous change orders that occur during the execution of the project. The project experiences more than ten (10) change orders due to a number of reasons; change of project site/ location, change of finishes requirement, like floor being change from screeding to tilling, incorporating of elevator, just to mention but few.

Also, delay in payment was found to be one of the causes of poor team performance on project cost management. The project recorded over 30% cost overrun which made the

project cost management performed very poorly, as well as the project schedule which was elapsed by twelve (12) months. The course of action taken was payment of fluctuation to cover raising prices due to delay project.

In spite of these, the project team members well informed the clients of the consequences of his actions on the project performance. In conclusion, the overall project team performance of the selected project was found to be 66.86% which is satisfactory as indicated in table 4.15.

Table 4. 15 Project Performance measurement factors and their respective weightings.

Team Performance Measures	Rank	Weighting
Team members' performance	1st	0.25
Project phases and tasks aspects	2nd	0.21
Overall satisfaction	3rd	0.18
Project safety aspect:	4th	0.14
Project cost aspect:	5th	0.11
Project schedule aspect:	6th	0.07
Change management aspect:	7th	0.04

Table 4. 16 Level of team performance

LEVEL OF TEAM PERFORMANCE (%)						
TEAM PERFORMANCE MEASURES	Team Member 1	Team Member 2	Team Member 3	Team Member 4	Team Member 5	Team Member 6 Average
Team Members' Performance	76	80	92	64	92	88
Project Phases And Tasks	56	64	76	48	80	76
Overall Satisfaction	44	72	92	60	92	96

Project Safety Assurance	32	60	76	36	88	92	64
Project Cost Management	20	32	68	52	48	44	44
Project Schedule	40	32	52	40	56	44	44
Change Management	48	40	36	36	40	52	42
Overall Team Performance	50.14	62.29	78.87	51.86	79.71	78.28	66.86

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

The aim of the study was to assess the performance of the Ghanaian construction project team. To accomplish this aim, three set of objectives were fixed which was directed by research questions. The study in this chapter intend to review the objectives and research questions to find out degree to which the aim of the study has been accomplished during the course of the study. Conclusions based on the findings as well as recommendations and recommendation for further studies would be presented in this chapter.

5.2 REVIEW OF OBJECTIVES

Three objectives were fixed to achieve; first objective was to identify typical Ghanaian construction project team characteristics. This objective was achieved by undertaking an extensive review of literature on Ghanaian construction project team characteristics or profile. The literature discovered several characteristics in the construction project team. Eighty (80) characteristic were used to develop a questionnaire and was administered to the consultants and contractors of ongoing and newly completed projects in the tertiary

institutions in Ashanti region. A correlation analysis of factors was adopted to determine which factors correlated with each other such that a change in one will affect the other. A data reduction technique, namely factor analysis were adopt to create which of the specific variables could be measuring aspects of the similar original dimension of the identified characteristics in the Ghanaian construction project team.

Also, objective two was to determine the constituents for measuring project team performance from the perspectives of project team members. In accomplishing these objective, forty (40) factors were identified as performance measurement indicators to effective team performance through literature review. The different aspects of project performance measurement (Task, Cost, Safety, Change management, Schedule and Overall satisfaction). A Likert scale of 2 – 5 as “strongly disagree” which was ranked 1, “disagree” ranked as 2, “neutral” as 3, “agree” as 4 and “strongly agree” as 5; was used to ranked the respondents level of agreeing to the factor that leads to the performance of construction project teams.

Lastly, the third objective was to measure the performance of Ghanaian construction project team using the performance measures. A case study approach was selected to be the most appropriate methodology in achieving the objective. Construction of 5 storey SRC hostel block at Adako Jachie for Kumasi polytechnic was selected as a case study. an interview guide was prepared to interview project team members and clients in order to measure how well the team performed on the project.

5.3 SUMMARY OF FINDINGS

5.3.1 OBJECTIVE ONE

The summary of findings of this research revealed by the analysis are presented below:

To identify typical Ghanaian construction project team characteristics, eighty (80) characteristics were identified through extensive literature search. Factor analysis was used

to categorized into three stages; initial consideration of the data, screening of data and determining the variations using SPSS the intercorrelation which was tested by means of the KMO test and Bartlett's test of sphericity. The fourteen (14) common characteristics that emerged during the analysis are; 1. Good working relationship among team members, 2. Concern for team members because taking good care of the team members, 3. Effective motivation systems for team members, 4. Concern for each other member of the team, 5. Setting of achievable goals for the teams, 6. Subgroups are incorporated into the team, 7. Team innovation, 8. Individual determination to accomplish, 9. Understanding each other's values and beliefs, 10. Expression of disagreement with initial group goals, 11. Discussion and brainstorming of team goals, 12. Variances of view are encouraged, 13. Team member satisfaction, and 14. Members of the team know each other very well as people.

This indicate that for a project team members to work effectively to achieve success, the above characteristics need to be found among the Ghanaian Construction project team.

5.3.2 OBJECTIVE TWO

In determining the constituents for measuring project team performance from the perspectives of project team members like contractor and consultants. Forty (40) factors were identified under seven (7) main headings namely Task, Cost, Safety, Change management, Schedule, team performance and Overall satisfaction. Relative importance index were used for the analysis and the top ten (10) project performance measurements to effective project team performances out of the forty (40) are: 1. Preparedness to work together another time with the team members, 2. Timely project inspection, 3. Effective communication with the client, 4. Project Quality assurance, 5. Well-managed and documented Safety record keeping and reporting, 6. Contractor showed good technical capability on the project, 7. Project construction completed correctly, 8. Project team members showed capability required for the project, 9. Effective Project planning, 10.

Professional and skilled people were employed for the project.

5.3.2.1 MAIN FACTORS OF PROJECT TEAM PERFORMANCE

MEASUREMENT

The seven (7) main identified factors measuring project team performance were ranked as follows starting from top; Team members' performance with a mean score of 4.151, Project phases and tasks with a mean score of 4.102, Overall satisfaction (3.966), Project safety (3.911), Project cost (3.759), Project schedule (3.715) and Change management (3.613)

These results indicates that in assessing the project team performance, high priority should be given to the team member's performance, followed by project phases and task, etc.

5.3.3 OBJECTIVE THREE

In measuring the project team performance of the selected project, the following were the level of team performance; Team Members' Performance with an average marks of 82%, Project Phases and Tasks 66.67%, Overall Satisfaction 76%, Project Safety Assurance 64%, Project Cost Management 44%, Project Schedule 44% and Change Management 42%. Therefore, the overall project team performance of the selected project is 66.86%.

5.4 CONCLUSION

. The study was to assess the performance of Ghana construction project teams on ongoing and newly completed construction projects in the tertiary institutions in Ashanti region by identify typical Ghanaian construction project team characteristics and determine the constituents for measuring project team performance and measure the level of project team performance of a selected project.

The main findings of the study revealed that performance of construction project team is very vital to every project success. The higher the performance of project team, the

higher the project achieving success. The success of the Ghanaian construction industry has an effect on its national economies. Therefore, forming an effective and good project team is anticipated to build a good working relations as indicated by (Demkin, 2008). Every effective project team must inherent the fourteen (14) common characteristics as indicated.

5.5 RECOMMENDATIONS

The prime aim of this study was to assess the performance of the Ghanaian construction project team by identify project team characteristics, factors that constitute project performance measurement and measure the level of project team performance. In light of the findings of this research, the following recommendations are suggested as measures and strategies for the improving the performance of the project team in the Ghanaian construction industry.

1. Professionals in the Construction industry should be educated on the importance of the project team working and team building. Understanding this would go a long way to affect the performance of the project teams in so doing achieving project success.
2. Project leaders/ managers in the construction industry should create the flexible and favorable atmosphere for the team members' right from the inceptions to completion of the project by clearly defining each project member's roles and responsibilities. These would encourages good team spirit and boost the morale of the project team members thereby ensuring good working relation for a success of the project.
3. Professional in the construction industry should be willing to collaborate and work with other professionals as a team on a construction projects. By having a change

of mindset and understanding the need to work as a team to achieve success through meetings, seminars, workshops, etc.

4. The principle of team building and team working should be incorporated into our education curriculum in the tertiary institutions. So that student coming out as professionals would have the foreknowledge on importance of team work.
5. Institutions in the built environment such as Ghana Institution of Surveyors, Ghana Institute of Architect and the Ghana Institution of Engineers should organize short course and seminars on the importance of the project team working, team formation techniques and strategies for contractors and consultants.

5.6 FURTHER RESEARCH

Several investigation can be looked into in future and therefore recommend for further research:

1. Forecasting project team performance in construction project team.
2. Investigation into character traits of construction project team members and its effect on team performance regularly.
3. Development of framework for measuring project team performance.

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APPENDIX

APPENDIX A: SURVEY QUESTIONNAIRE SURVEY QUESTIONNAIRE

This questionnaire forms part of a research project which studies into the performance of Ghanaian construction project teams. It basically investigates the team characteristics and the effectiveness of the teams based on project performance measures.

All information will be used solely for academic purposes.

Any question on this research, please contact:

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SECTION A: RESPONDENT'S PROFILE

1. Which type of organization do you represent?
☐ Owner ☐ Consultant ☐ Contractor
2. Typical projects your organization engages in:
☐ Buildings ☐ Water and sewerage ☐ Roads and transportation
☐ Others, please specify.....
3. About how many people are averagely in your project management team?
.....
4. Respondent's Job title:
☐ Project director ☐ Chief project manager/architect/engineer
☐ Assistant project manager/architect/director ☐ Sub/contractor
☐ Others, please specify.....
5. Respondent's gender: ☐ Male ☐ Female
6. Years of respondent's project experience in the industry:
☐ Less than 5 years ☐ 5 to 10 years ☐ 10 to 15 years
☐ Above 15 years
7. How many major individual projects have you undertaken in the last 5 years?
☐ 1 to 10 ☐ 11 to 20 ☐ Above 20
8. Value of projects executed within the last 5 years (in million dollars):

☐ Less than 2 M ☐ 2 to 5 M ☐ 5 to 10 M
 Above 10 M

SECTION B: COMMON CHARACTERISTICS OF CONSTRUCTION PROJECTS IN GHANA

9. Kindly check the boxes that matches with the team characteristics you've experience in your latest team(s), with parameters defined as; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

No.	Team characteristics present in Ghanaian construction projects	1	2	3	4	5
1	Strong team spirit					
2	Affection between team members					
3	Understanding each other's point of view.					
4	Individual determination to accomplish					
5	Firm establishment of member's roles at the inception stage.					
6	No damaging of personality.					
7	The team is open to new ideas and is constantly improving.					
8	Members rarely express disagreement with initial group goals.					
9	Members challenge the leader's ideas.					
10	Team members aimed in achieving its goals successful					
11	Effective use of time.					
12	Enforcement of team structure and discipline					
13	Personal safety is the utmost concern.					
14	Discussion and brainstorming of team goals.					
15	Team like each other's company, and are effective					
16	Team cohesiveness.					
17	Good understanding of each other's abilities.					
18	Clarity of Team Goals					
19	The roles and tasks given to individual according to abilities, and not by external status or first impressions.					
20	Team Cooperation					
21	Team innovation.					
22	Conformity to the team's way of thinking and behaving is expected					
23	Provision of direction and encouragement from team leader.					
24	High commitment to team goals and tasks					
25	Team's objectives are achievable					
26	Efficient division of labour within the team					

27	Members are concerned with their acceptance and inclusion in					
	the team.					
28	Adequate team planning for work done.					
29	Ability to addressed barriers and difficulties.					
30	Member's contentment with each other.					
31	Team members understand each other's values and beliefs.					
32	Member's agreement on team's goals.					
33	Ability to accommodate changes of roles and tasks to achieve the team's goals.					
34	Power conflicts between team members.					
35	Team receives and gives feedback of information					
36	Strong pressure to conform to team norms					
37	Members agreement with the leader ideas					
38	Lot of team drive.					
39	Striving high performance					
40	Subgroups are integrated into the team as a whole					
41	Fear of rejection by other members of the team					
42	Team member satisfaction					
43	Likeness and respect for each other					
44	Members of the team know each other very well as people					
45	Team members share the same goals					
46	Conflict due to differences in value					
47	Team is inward looking and resist change					
48	Differences of opinions are encouraged					
49	Cohesion and commitment to the team					
50	Strong motivation of team members.					
51	Efficient use of subgroups of the team					
52	Tentative and polite communication					
53	Willingness to be part of the team					
54	Members trust and reliability					
55	Conflict between different cliques and factions in the team					
56	Members acceptance of roles and status					
57	Evidence of conflict in the team					
58	We talk through disagreements until they are resolved					
59	Tolerance of constructive criticism					
60	Leader comfortability in assigning duties					
61	Encouragement of high performance and quality work					
62	Suitable group structure and organization					

63	The team has been together so long that it needs a “shake-up”					
64	Strong implementation of team decisions					
65	Team truthfulness and honesty					
66	Contentment of members’ roles in the team					
67	Openness of discussion of issues in the team					
68	Conflict is dealt with openly					
69	Different ways of doing things are accepted in the team					
70	The team leader has participative and consultative style					
71	There is quite a bit of tension in the team					
72	The team functions very efficiently					
73	Independence in carrying their work					
74	This is a group of individuals, and not a team					
75	Friendship relationship among members					
76	Clarity of roles and responsibilities in the team					
77	Team members frequently take on leadership roles					
78	Most work is done by only some team members					
79	Ability to take initiative without depending on the leader for instructions					
80	Everyone enjoys the team because objectives are achieved					

10. This part of the questionnaire examines the different aspects of project performance measurement (Task, cost, safety, change management, schedule and overall satisfaction) and how they lead to effective construction project teams. Kindly check the boxes that best describes the performance of latest project(s) you’ve been engaged in, with the parameters defined as: 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, and 5= strongly agree.

	Overall satisfaction	1	2	3	4	5
1	Project team successfully achieved the project objectives.					
2	Satisfaction of final product of the project.					
3	Project team exercise effective documentation system					
4	Project completed to meet the quality standard specified during the earlier stage.					
5	Project site kept clean and well organized.					
	Project phases and tasks aspects					
6	Effective Project planning					
7	Project construction completed correctly.					
8	Quality Project designs					
9	Time for design delivery					

10	Timely project inspection					
11	Project Quality assurance					
	Project schedule aspect:					
12	Project completion					
13	Consideration of unforeseen physical and weather in project					

	schedule.					
14	Demonstration of sense of urgency					
15	Adjustments to maintain or improve the schedule.					
16	Regular review of master schedule and Monitoring of Critical milestones.					
17	Regular preparation of Reports and documentation.					
		1	2	3	4	5
	Project cost aspect:					
18	Project completed within budget.					
19	Contractor seek alternative solutions for reducing cost.					
20	Continuously monitored of project costs					
21	Continuously monitored of Overall project costs					
	Project cost control system					
	Change management aspect:					
22	Project has no deficiencies during construction.					
23	Decisions to rework were based on cost not value of work.					
24	A defined change control system was used for the project.					
25	Project is flexible to accommodate the changes I requested at any time.					
26	Change control systems was well-managed by the project team.					
	Project safety aspect:					
27	Safety is clearly a priority in this project.					
28	Exceptional efforts were made to establish effective safety procedures.					
29	Safety record keeping and reporting are well-managed and documented.					
30	Project safety inspections are well-managed.					
31	Project team reports accident statistics to me on a regular basis.					
32	As owner, I establish specific safety goals for the team performing this project.					
	Team members' performance					

33	Good service of the contractor was demonstrated during the project.					
34	Contractor demonstrated good technical ability on this project.					
35	Professionals were hired for this project.					
36	Project team members had a friendly atmosphere and trust.					
37	Project team members demonstrated expertise necessary for this project.					
38	Project team members communication among themselves and with the owner/ client					
39	Project team responds quickly to my needs with professional service.					
40	As owner, I would like to work together again with the team members in future projects.					

11. Please what is the actual overall duration of current/last project undertaken (from start to completion date of contract):

☐ 0-6 months ☐ 6-12 months ☐ 12-18 months ☐ 18-24 months ☐ above 24 months

12. Please how long was the project execution expected to take before the start of the project?

☐ 0-6 months ☐ 6-12 months ☐ 12-18 months ☐ 18-24 months ☐ above 24 months

13. Please select the number of variation orders issued within the project:

☐ None ☐ 1-5 ☐ 6-10 ☐ 11-15
More than 15

14. Please check the most common causes of change orders on the project:

☐ Inadequate project objectives ☐ Design errors and omissions
☐ Conflicts between contract documents ☐ Ambiguous design details
☐ Lack of contractor's involvement in design
☐ Others, please specify.....
☐

15. Please select all the incidents that were recorded on the project as indicated below:

☐ Near misses ☐ OSHA recordable ☐ First aid cases
☐ Workers compensation cases ☐ Lost workdays
☐ Others, please specify.....

Thank you very much.

APPENDIX B: INTERVIEW GUIDE

INTERVIEW GUIDE INTRODUCTION

My MSc. research is entitled “*Investigation into the Performance of Ghanaian Construction Project Team*”. One of the objectives is to measure the performance of Ghanaian construction project teams using the project performance measures. This construction project of which you are member of the team has been selected as a case study. This interview is conducted as means to assessing the performance of the project team on this project.

A. INTERVIEWEE BACKGROUND

1. What is your job title:

2. Can you please explain your responsibilities in the team?

3. How many years of construction experience do you have?

4. How long have you been working with this team?

5. How many projects have you been involved since you started working in this team?

6. What are the types of projects that you’ve been involved since you started working in this team?

B. TEAM/PROJECT-RELATED (TO BE COMPLETED BY PROJECT TEAM LEADER)

1. Can you provide further information about this project?

- Project owner:

- Project Title:

- Location :

- Class of contractor:

- Contractor's years of operation:

- Project commencement date:

- Actual project completion date:

- How many professionals form the project team?

- Number of key team members (core team)

- Please, state the total budgeted project cost for this project :

GHC _____

- Please, state the total actual construction cost:

GHC _____

- What was the proposed project duration :

- What was the actual project duration :

C. TEAM PERFORMANCE EVALUATION

How would you rate your performance of the team in terms of the following indicators as per this project with marks of 4 being "poor performance", 8 being "fair performance",

12 being “Average performance”, 16 being “Good performance”, 20 being “Excellence performance”.

TEAM PERFORMANCE EVALUATION		Marks				
		4	8	12	16	20
TEAM MEMBERS' PERFORMANCE						
1	Contractor demonstrated good technical ability on this project.					
2	Professionals were hired for this project.					
3	Project team members had a friendly atmosphere and trust.					
4	Project team members demonstrated expertise necessary for this project.					
5	Project team members communication among themselves and with the owner/ client					
TOTAL						
PROJECT PHASES AND TASKS						
6	Effective Project planning					
7	Project construction completed correctly.					
8	Quality Project designs and Time for design delivery					
9	Timely project inspection					
10	Project Quality assurance					
TOTAL						
OVERALL SATISFACTION						
11	Project team successfully achieved the project objectives.					
12	Satisfaction of final product of the project.					
13	Project team exercise effective documentation system					
14	Project completed to meet the quality standard specified during the earlier stage.					
15	Project site kept clean and well organized.					
TOTAL						
PROJECT SAFETY ASSURANCE						
16	Priority of project Safety.					
17	Exceptional efforts to establish effective safety procedures.					
18	Well-managed and documented safety record keeping and reporting.					
19	Project safety inspections are well-managed.					
20	Regular site accident reporting					
TOTAL						

	TEAM PERFORMANCE EVALUATION	Marks
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		4	8	12	16	20
PROJECT COST MANAGEMENT						
21	Project completed within budget.					
22	Contractor seek alternative solutions for reducing cost.					
23	Continuously monitored of project costs					
24	Continuously monitored of Overall project costs					
25	Project cost control system					
	TOTAL					
PROJECT SCHEDULE						
26	Project completion					
27	Consideration of unforeseen physical and weather in project schedule.					
28	Demonstration of sense of urgency and adjustments to maintain or improve the schedule.					
29	Regular review of master schedule and Monitoring of Critical milestones.					
30	Regular preparation of Reports and documentation.					
	TOTAL					
CHANGE MANAGEMENT						
31	Project deficiencies during construction.					
32	Decisions to rework were based on additional cost					
33	Use of defined change control system.					
34	Project flexibility to accommodate the changes.					
35	Management of Change control systems					
	TOTAL					

OTHER RELATED QUESTIONS

- Are there any issues or problems that your team faced throughout the course of this project?

- If yes, how did you overcome? Measures taken?

-
-
-
-
-
-
3. Based on your experience working with this team, how would you describe the change management process (coordinating change orders, addition, variations, modifications throughout the project) practiced by this team?

-
-
-
-
-
-
4. In your opinion, would you say team performance factors do have some impact on the change management aspect of the project?

-
-
-
-
-
-
5. Could you describe how your team deals with change orders?

-
-
-
-
6. How many change orders did your team have on this project?

-
7. What were the costs of the change orders?

8. What causes the number of change orders?

9. How does team leadership plays priority on project change management from the perspective of the construction team members.

10. (If interviewee agrees with the statement) Any specific example on how leadership effect changes management process on your team?

11. What do you think would be the other important factor(s) (aside from the 7 factors) that would have an impact on the team performance (within your team)?

12. Is there anything else you'd like to share with me on how to construction project team can perform?

Closing remark:

End of questions.

Thank you for partaking in this interview.

Thank you for spending your precious time today, and I will certainly get back to you if there is any questions during the transcription of this interview. Before I go, do you have any remarks, observations or questions?

