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KUMASI - GHANA

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Project Participants' Satisfaction on Construction Delivery

BY

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OF
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DECLARATION

I hereby declare that this submission is my own work towards the Masters of Construction Management and that, to the best to 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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ABSTRACT

Very often project participants have expressed dissatisfaction with teams that they have worked with and in order to address this problem, the research sought to find if there were factors that could be used to measure project participants' satisfaction so that they are inspired to succeed on the project. To achieve this aim the study involved professionals such as civil engineers, project managers, architects, clients, contractors, and quantity surveyors through random sampling to provide the relevant data for the study. The researcher used survey questionnaires to collect data from one hundred and sixty-two (162) construction practitioners with an average of 18 years of experience.

The study shows that performance parameters are critical to the success of construction project with competence taking the lead. Conflicts as well as payment issues, however, marred the project performance issues with project participants mostly disapproving with issues therein. Some performance issues like communication, quality specification, and competence were internally correlated. Project schedule and project participants' satisfaction were correlated. Remarkably, performance issues identified in the study significantly predicted project participants' satisfaction. Competence, payment issues but most importantly, procurement processes were critical determinants of participants' satisfaction.

The study recommends that competence, payment and procurement issues; environmental safety; proper management and cost saving approaches; and good communication, etc., in every construction project should be adequately addressed.

DEDICATION

This work is dedicated to my **mother Madam Comfort Comley Aryee**, I am very grateful for all that you have done for me through my education. May the Almighty God reward you for all that you have spent on me.

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TABLE OF CONTENTS

Contents	Page
DECLARATION	ii
ABSTRACT	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vii
LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the Study	1
1.2 Need to Assess Satisfaction Attributes of Project Participants	2
1.3 Statement of the Problem	6
1.4 Research Question	7
1.5 Aim	8
1.7 Scope of the Study	8
1.8 Research Method	9
1.9 Significance of the Study.....	10
1.10 Thesis Structure/Organization	10
CHAPTER TWO	12
LITERATURE REVIEW	12
2.1 Introduction	12
2.3 Trust and Loyalty	14
2.4 Communication	15
2.5 Cooperation	16
2.6 Social Interactions	17
2.7 Trust/ Trustworthiness	18
2.8 The Effects of Conflict in Project Teams	19
2.9 Team Building Practices in Construction Project	20

2.10 Disjointed Construction Project Teams	23
2.11 Aligning Participants Needs to Project Goals	24
2.11 Project Team Satisfaction	26
2.12 Project Team Interdependence	28
2.14 Attributes of Project Leadership	29
2.15 Chapter Summary	31
CHAPTER THREE	32
RESEARCH METHODOLOGY	32
3.1 Introduction	32
3.2 Research Design	32
3.3 Study Population	33
3.4 Sampling Procedure and Sample Size	33
3.4.1 Sample Size for Civil Engineers	34
3.4.2 Sample size for Project Managers	34
3.4.3 Sample Size for Architects	34
3.4.4 Sample Size for Client Organizations	35
3.4.5 Sample Size for Quantity Surveyors	35
3.4.6 Sample Size of Contractors.....	35
3.5 Data Collection	36
3.6 Data Collection Instrument	37
3.6.1 Questionnaire distribution	39
3.7 Data Analysis	39
3.7.1 Pearson"s Correlation Analysis	40
3.7.2 Regression Analysis	40
3.8 Chapter Summary.....	40
CHAPTER FOUR	42
RESULTS AND DISCUSSIONS	42
4.1 Introduction	42
4.2 Profile of Respondents	42
4.3 Reliability Analysis	43
4.4 Satisfaction with Construction Projects	45
4.4.1 Communication	46

4.4.2	Team Goals and Objectives	47
4.4.3	Quality/Specification	48
4.4.4	Competence	50
4.4.5	Payment	51
4.4.6	Project Schedule	51
4.4.7	Response to Complaints	52
4.4.8	Health and Safety/Risk/Environment	53
4.4.9	Procurement Processes	54
4.4.10	Team Integration/Work Relationships	55
4.4.11	Conflict/Conflict Resolution	56
4.5	Level of Satisfaction with past and current Projects	58
4.6	Factors predicting or determining Satisfaction with Project	59
4.7	Summary of Chapter	63
CHAPTER FIVE		64
CONCLUSIONS AND RECOMMENDATIONS		64
5.1	Introduction	64
5.2	Summary of Findings	64
5.2.1	The Attributes for Construction Project Delivery	65
5.2.2	Characteristic Factors that determine Project Participants' Satisfaction	65
5.3	Conclusion	66
5.3	Recommendations	66
REFERENCE		70
APPENDIX A: QUESTIONNAIRE SURVEY INSTRUMENT		75
 LIST OF TABLES		
Table 3.1: Sample Size of Hypothetical Project Team		35
Table 3.1.2: Sources from which scale of Questionnaire were obtained		37
Table 4.1: Years of Experience (Descriptive statistics)		43
Table 4.2: Reliability statistics		45
Table 4.3: Communication (Descriptive Statistics)		47

Table 4.4: Team Goals and Objectives (Descriptive Statistics)	48
Table 4.5: Quality/specifications (Descriptive Statistics)	49
Table 4.6: Competence (Descriptive Statistics)	50
Table 4.7: Payments (Descriptive Statistics)	51
Table 4.8: Project Schedule (Descriptive Statistics)	52
Table 4.9: Response to Complaints (Descriptive Statistics)	53
Table 4.10: Health and Safety/Risk/Environment (Descriptive Statistics)	54
Table 4.11: Procurement Processes (Descriptive Statistics)	55
Table 4.12: Team Integration/Work Relationships (Descriptive Statistics)	56
Table 4.13: Conflict/Conflict Resolution (Descriptive Statistics)	57
Table 4.14: Relative Approval Rate of Constructs measured (Descriptive Statistics)	58
Table 4.15: Respondents' Satisfaction with past and current Projects	59
Table 4.16: Correlation coefficients for eleven variables in the study	60
Table 4.17: Predictors of Project Participants' Satisfaction	61

LIST OF FIGURES

Figure 4.1: Distribution of Respondents by Profession	42
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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

With the singular purpose to guarantee satisfaction for the client, it is important to appreciate the requirements and expectation of all participants involved in construction delivery process. The impression of each member of the project team is dependent on how much that individual values the needs and requirement of the other parties on the project. For these and other reasons, researchers in the industry have over the years reiterated recognition of project participants satisfaction as an important determinant and indicator for success in the construction process (Sanvido et al., 1993; Chan and Chan, 2004). In addition, the annual report of the Construction Industry Development Board (2008) highlighted participants satisfaction as one key indicator for measuring the success of completed projects. The report further touched on perceptions of project teams in terms of how satisfied they are with clients and the project in general. This shows that the satisfaction requirements of other project participants are essential. The Architect, Designer, Contractor, Project Manager, Quantity Surveyor, Sub contractor and suppliers all require each other's input and contribution to achieve project success. Project team satisfaction is now being considered as indicator for measuring construction success and performance in the industry. This is based on three main dimensions which are cost, time and quality. However, soft measurement criteria that consider participant satisfaction have been used in order to improve the existing methods (Skitmore and Masrom, 2009).

Construction projects involve many parties, and their satisfaction can directly affect the smooth processes leading to the unimpeded completion of the project. With the prime objective to complete the project, the critical satisfaction factors important to the

construction process must be identified. Having identified these important factors, participants will know well ahead of time the intrinsic and behavioral values they need to bring along onto the project, and eschew those traits and attributes that might negatively impact the successful project delivery.

Contemporary construction activities are becoming a service industry, and therefore require that parties in the value-chain must of necessity adopt a proactive attitude in order to effectively contribute and combine their skills and capabilities with that of other people on the team to achieve overall project success. This naturally translates into achieving the client objectives. According to Winch (1998), construction is a service industry that involves the acquisition of a capacity to produce rather than merely purchasing a finished product, for these reasons the behavioral culture of members in the project team is significant since this has the tendency to either reinforce or damping the enthusiasm of colleagues who are together on the project. “soft measurement” tools relative to the interpersonal relationships such as, trust, commitment, co-ordination, communication are some of the intrinsic and subjective values that can only be derived from psychological maturity.

1.2 Need to Assess Satisfaction Attributes of Project Participants

The project participants and their needs are informed by the nature and type of construction project. Also, the construction project participants vary in its composition depending on the given phase of the project value-chain. Nevertheless, some key participants are present at almost all the stages of the project. According to Uher and Loosemore (2003), the main client and the project manager remain in the project process from beginning to the end. Up until now satisfaction in the construction sector have clearly been stressed in detail but only for the requirements of the client, meanwhile little or no attention is given to the needs of

other members of the project team. In view of this, it is important to look into the satisfaction attributes of the stakeholders of the project team; this idea has potential to guarantee the overall project performance.

Therefore, an acknowledgment of each participant and their requirements is essential in improving project satisfaction in the construction industry. To achieve these important realities, there has to be a system that would directly measure the satisfaction attributes among project participants so that pertinent issues of team satisfaction would be adopted. This would require analysing the influence of integrating these participants' and their satisfaction attributes, with the aim of improving the satisfaction levels of the project participants throughout the project life cycle.

Participant satisfaction is that aspect of relational qualities that explores ways and means to meet the needs of the project participants. Project team satisfaction has assumed an essential competitive advantage in all areas of production (Woodruff et al., 1997; Kotler 2000, as reported by Karna, 2009). Conceivably, the significance of participants' satisfaction is amplified by industries where competition is keen (Jones and Sasser 1995).

Firms use participants' satisfaction as a baseline in designing, monitoring, and evaluating products and service rendering, including motivating and compensating employees. Measuring participants' satisfaction yields returns to the organization in many ways. This could lead to organizational benefits like improvement in communication among parties, allowing mutual agreements, evaluating progress towards goals, and monitoring achieved outcomes and changes.

Within the field of construction, the significance of participant satisfaction during project delivery has increased due to the screwed competition and exacting client demand as a result

of the industry's non-performance (Karna, 2009). Project team's satisfaction has attracted a lot of attention both from academia and practitioners in industry. In construction sector, the professionals in the field have taken to strict practices that lead to mutual commitment with other key project parties. Essentially, the construction industry is evolving as a service oriented industry; stemming from this reasons, individuals, groups, clients and other organizations connected to the project must work as a collective unit, pursuing project goals with common sense of purpose. Consequently, failure to appreciate other participants' goals and requirements on the project network will result in individual and inter-organisational conflicts. This development has begun to spiral various relational changes taking place in industry; in the manner services are rendered.

As indicated by Alshaw and Faraj (2002), a typical construction project is a collaborative venture that involves a number of different organizations brought together to form „the construction project team.“ This team is responsible for the design and construction of the project. Any party involved in a construction project team, such as the project manager, site superintendent, and other crews must understand the importance of having effective teamwork. Many construction firms have therefore widened their scope of operation in the project life cycle and project development by adopting concurrent engineering methods in the way contractors manage service to their clients.

Hitherto, performance measurement in construction has been benchmarked against cost, time and quality, which set up the overall metrics. A project is deemed successful if the building is completed at the right time, the right price and at the right quality as opined by the “iron triangle” or the “triple constraints” (Atkinson et al., 1999). In this traditional straight thinking approach the discrete delivery of the building was the ultimate object of the project participants; in that, an uninterrupted production was key and the client is conceived as a passive buyer of the building at the end of the construction value-chain. By

this assessment the client is lost in oblivion, no attempt is made under such circumstances to describe what really goes on in the day-to-day interaction among the parties under the project. The medium used to communicate to the client and the means by which participants receive feedback on intricate issues at the various stages of the project, and production processes are often not considered. On the contrary, construction associates with customer orientation has strongly advocated for interaction, where participants' service offering is emphasized simultaneously with construction production process. It is stated that the traditional performance measurement tools are too simple for measuring a construction project (Dainty et al., 2003). However, with the advent of the Latham and Egan's report, soft measurement tools such as project team satisfaction have been highlighted and introduced gradually in the measurement of project success (Chan et al., 2004).

The construction industry is a specific industry characterized by complex multidisciplinary relationships and co-operation, the temporal nature of working together, different suppliers, subcontractors and the list is endless. Location problems and one-off product delivery are huge constraints on quality. These complexities of construction and peculiarities of the project production, has cause the industry with loads of problems in the bid to achieve quality for the client. This scenario has long persisted and left the client in an unsatisfied state. In part, this is due mainly to lack of customer-service oriented culture within stakeholder organizations. Indication of genuine service offering is apparent in the industry but the use of "soft" measurement tools such as project team satisfaction, is still at an early stage of development. (Torbica et al., 2001). In construction, project participants satisfaction has been considered a dimension of quality (Yasamis et al., 2002); Barrett 2000; Palaneswaran et al., 2006) and has an important factor indicating projects' success (Chan and Chan 2004; Sanvido et al., 1992). Participant satisfaction can also be observed as a tool

for developing the construction process (Egan 1998; Mbachu et al., 2006) and a tool for mutual learning (Love et al., 2000; Bertelsen 2004).

Individuals or experts working outside their own organizations together with other professionals in a project environment and to gain significant benefits when apart from deploying their technical expertise endeavor to blend their skill and efforts with other participants in the pursuit of a common agenda. People end up picking good attitudes and skills which otherwise were not found within their own organization. Quality service culture is therefore enhanced in the process arousing abilities such as pleasant and affable interpersonal disposition, effective communication low, and strategic decision-making are some of the qualities that are greatly improved and imparted. The philosophy of achieving project team satisfaction gives a positive impression about the participant involve to those that interacts with him/her, when that party has meet their expectation it systematically builds confidence and trust which drive their intrinsic value to achieve. It is abundantly acknowledged that superior project team satisfaction leads to relationship strength and deepens the sense of collaboration, which has been found to be beneficial (Storbacka et al., 1994).

1.3 Statement of the Problem

Project participant satisfaction has been an issue in the industry for a long time (Latham et al. 1994). Dissatisfaction is widely experienced by participants of the construction industry and this has been caused by many reasons but largely attributable to overrunning project costs, delayed completion, inferior quality and incompetent service provision by consultants, contractors and other service providers (NAO, 2000; HSE, 2002; CJ, 2004).

Project team satisfaction is acknowledged as a fundamental problem for construction participants who must constantly seek to improve interpersonal skills and hence performance

if they are to survive in the competitive global market. To this end, the interrelationships among participants of the project must contribute to overall project performance; performance evaluation is effectively measured by levels of satisfaction. Each member has to be satisfied with the performance of the other so that good working relationships and suitable levels of synergy are reinforced.

Contemporary assertiveness of the client for value for money and quest for meeting clients' needs and expectations has ignited a lot of attention in academia as well as in industry in the bid to developing a measurement tool for predicting rate of assessment of satisfaction for different members of the project team (Nzekwe-Excel, 2010). The call has extended beyond just the client, nonetheless to all the principal project stakeholders. The enquiry is to achieve a better understanding and appreciation of project team satisfaction factors, examining discreetly the concept and attributes of satisfaction in construction delivery. At present, satisfaction has been mostly considered an issue just for construction clients or project owners, to the detriment of other members on the project team. Therefore in an attempt to address the issues of satisfaction, those factors of contentment required by all parties in the construction process need to be assessed to foster a better sense of integration for the project team towards successful completion of projects.

1.4 Research Question

In order to explore and identify the factors for measuring the satisfaction of project participants on project delivery, the following research questions are articulated based on the aims and objectives of the research.

- i. What are the performance factors leading to the execution or delivery of construction projects?
- ii. How do the performance factors determine the project participants' satisfaction

- with the delivery of construction projects?
- iii. What recommendations derive from the findings of the study?

1.5 Aim

The aim of this research is to identify factors for measuring satisfaction of project participants at all phases during construction delivery

In order to achieve the above stated aim of the research, the following specific objectives have been stated as follow:

1.6 Objectives

- i. Identify factors that enhance project participants' satisfaction on construction delivery.
- ii. To predict factors that best determines project participants' satisfaction on construction delivery.
- iii. Make recommendations based on the findings of the study.

1.7 Scope of the Study

Even though there are many and various types of project participants to the construction industry this dissertation was focus mainly on Architects, Engineers, Project Managers, Designers, Main contractors, Sub contractors, Suppliers and client organizations. It is of interest to know that for this work, the term participant is synonymous with terms like; project stakeholder, project-team, integrated project-team. The project participants „were grouped into three basic groups which are the Client group, Consultant or Project Management group, and finally the Contractor group. It is assumed that the services that the contractor provides to the client starts from the time the contractor buys tender documents, through tender evaluation, to the point where the contract is awarded. The next step continues with the actual construction and finally to handover of the constructed or completed facility to the client. This assumption excludes the construction manager, design-

build contractor and any of those integrated procurement routes. With the designer/engineer (consultant) it is assumed that their services commence from the point of client brief to site works supervision until the construction is completed. Accra and Kumasi metropolis were locations where field survey for data collection was undertaken. These two geographical locations are chosen because of proximity to where most or all the targeted respondents were situated. Therefore, their closeness to information is quite accessible than anywhere else.

1.8 Research Method

In order to address the research question above, it is imperative to adopt appropriate logical, value-laden and coherent approach that enabled appropriate data collection, analysis and interpretation of the findings for the benefit of industry practitioners". Before this can be done, an extensive literature was reviewed to provide a thorough understanding of project participants satisfaction on previous researches that had been carried out. Both qualitative and quantitative statistical approach was used to analyze and interpret data collected from the field survey. Subsequently, a self-administered structured survey questionnaire was used to collect primary data based on the results obtained from the literature. The researcher employed the use of Reliability analysis and Pearson correlation to analyse the results. To further deal with those factors which were left after the Reliability analysis, these factors were regressed against the dependent variables, and the result was presented in a form of a prediction model for participants" satisfaction.

1.9 Significance of the Study

This thesis contributes to the body of knowledge relating to satisfaction of project participants and teams to essentially ensure the overall satisfaction of entire members of the project team. Besides focusing on satisfaction of project teams, it is also envisaged that aspects of this study will assist project managers, construction leaders, and professional

within the project environment to understand the factors that leads to and influence satisfaction of individuals and teams on a project. The development of a survey to assess the factors of satisfaction would serve as metrics to evaluate satisfaction among construction teams. This report is further envisaged to motivate other researchers to still continue investigating the effectiveness of participant satisfaction on construction teams. On administrative perspective, it will help top management and project leaders to improve their understanding on relationships among project teams. For participants on projects, it is expected to serve as a road map or guide on the values they need to imbibe and exhibit to build trust, cooperation, and commitment on project. Clients stand to gain immensely from this work, for the reason that most clients do not understand what satisfaction attributes could influence project participants to give of their best, for the proper and timely execution of the project. Hence such knowledge would help them to maximize the efforts of members which will lead to higher team performance.

1.10 Thesis Structure/Organization

The thesis is composed of six chapters which are independent though, nonetheless interrelated. The research will assume a trajectory that systematically explains the phenomenon of project participant satisfaction to its logical conclusion.

Chapter one contains the introduction to the research, a problem statement and the significance of the study is given to justify the need for the research. Thereafter the aim of the research, the objectives, and scope follow in that order. The research questions are then posed to focus the subject of the investigation into achieving the project objectives.

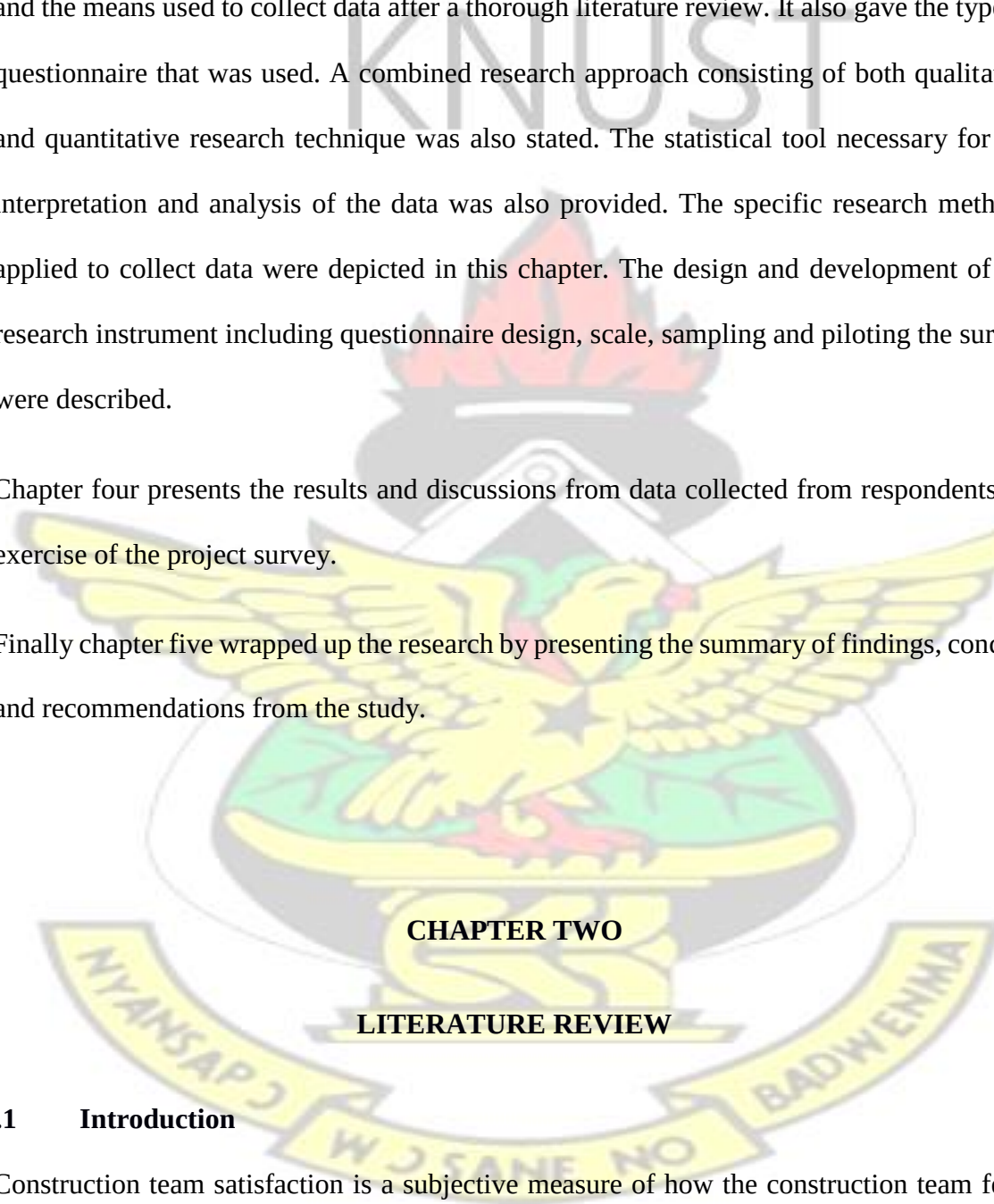
Chapter two gives a detailed review of literature in defining the concept and phenomenon of satisfaction of the project team in the construction industry. This phase highlighted the significance of satisfaction attributes needed by project participants. At this stage, the

philosophy, ideas, surveys, discoveries, experiments and frameworks of authors has existed in the construction industry were reviewed.

Chapter three gave in detail the research approach used to design the survey questionnaire and the means used to collect data after a thorough literature review. It also gave the type of questionnaire that was used. A combined research approach consisting of both qualitative and quantitative research technique was also stated. The statistical tool necessary for the interpretation and analysis of the data was also provided. The specific research methods applied to collect data were depicted in this chapter. The design and development of the research instrument including questionnaire design, scale, sampling and piloting the survey were described.

Chapter four presents the results and discussions from data collected from respondents in the exercise of the project survey.

Finally chapter five wrapped up the research by presenting the summary of findings, conclusion and recommendations from the study.

The logo of Kenya National University of Science and Technology (KNUST) is centered in the background. It features a yellow eagle with spread wings perched on a green shield. Above the eagle is a red torch. Below the eagle is a yellow banner with the text 'NYANSAPU WISDOM NO BADWENMA'.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Construction team satisfaction is a subjective measure of how the construction team feels when working on the project and how the project fulfills its expectations. Alvarado *et al* (2011). Construction participants' satisfaction is a measure of how much or the extent to which the needs, desires, requirements and expectations of project participants for a product

or service are met or exceeded according to Nzekwe-Excel (2010). Considering the essence of client satisfaction in the construction industry as reiterated by Egan (1998), satisfaction has been seen by researchers as one of the major challenges confronting the industry (Torbica and Stroh 2000; Karna 2004; Constructech 2005). The propriety and success of the construction industry depends largely on the clients' and users' continuous use of its services, which is highly dependent on their satisfaction. Satisfaction is a scale by which the needs, requirements and expectations of clients or customers are met or surpassed. The client's intention and decision to continually put his resources in the construction sector is predicated upon having his or her needs (or satisfaction attributes) met. In order to attain high participant satisfaction, it is fundamental that the construction industry maintains an enduring commitment for the satisfaction of everybody on the project from the highest (top) to the lowest individual within the project.

Sufficient comprehension of the project participant's requirements and expectations is essential to the success of any project. This is because construction project participants express dissatisfaction when their satisfaction attributes are not recognized. Liu *et al.* (1998) and Mbachu *et al.* (2006) put forward that the reason for stakeholder dissatisfaction in project teams are as a result of insufficient research into project participant requirements and their satisfaction attributes.

The construction industry like other industries is considered to be one of the most important industries in any economy. It effectively networks with nearly all fields of endeavor and other activities in an economic. Unfortunately, the intrinsic complexity, uncertainty and dynamics of most construction projects create challenges for even the best project managers (Nguyen, Ogunlana, and Lan, 2004). A construction project is frequently acknowledged as successful when it is completed on schedule, within budget, conforming to specification and

the satisfaction of participants. Research has also determined that construction team satisfaction, relationships devoid of entrenched positions, court arbitration and fitness for purpose of occupiers have also been used as measures of project success in recent times. Satisfaction in a project means that certain expectations for a given participant are met, whether owner, planner, engineer, contractor or operator. (De Wit 1988, cited in Munns, 1995) remarked that one of the main factor of a project to be seen as an overall success, is when there is an experiential level of satisfaction concerning the project's outcome among key participants in the parent organization. Project parties play a decisive role regarding the success or failure of a project. It is not surprising therefore that they are responsible for creating, managing, operating and utilizing the project and are invariably affected by it (Nguyen, Ogunlana and Munns, 2004).

Working in a group setting among construction project teams and organizations has always been the basis of construction project satisfaction. However, the notion that the construction industry is a contentious sector that is froth with disputes, which consequently leads to limited cooperation, is supported by a wealth of written material on it and reported proof within the industry (Mandell, and Steelman, 2004). Alliances, relationships and networks have evolved as inter-organizational responsiveness to fix countless human, business and environmental problems. The term inter-organizational dexterity is to show myriad of inter-organizational cultures that can develop among different people with different backgrounds, and other groups to work together on mutual problems (Mandell, and Steelman, 2004). The coalition of different parties in a team is a predominant attribute of construction projects. If one member is not able to perform within its role, the project is likely to fail. In this study, it is put forward that relationship for teamwork at personal level will have a great impact on the satisfaction of the project participants, especially in the area of prevention of

construction conflict. Therefore, the purpose of this study is to identify project team working factor that either meets or exceeds participants' expectation to uncover underlying relationships between these factors. The focus of this study will be on the behavior of professionals working in the three main project participants groups namely, owner, consultant and contractor.

2.3 Trust and Loyalty

Loyalty works at an individual level rather than organizational level. largely, person to person loyalty has been overly examined mainly in the social transaction literature with no definite explanation of people relational loyalty in the construction related literatures. (Mavondo and Rodrigo, 2001). interpersonal loyalty is informal, and might be seen as a consequences to inter-organizational commitment which is the relationship between or among organizations. Inter-organizational commitment is often concretized through contractual obligations that may be tightly or loosely specified, and it is this element of formality that distinguishes the two types of commitment theoretically and practically.

2.4 Communication

Within the project, communication is an effective tool team stakeholders use in getting tasks executed. It gives direction and focuses the efforts of members of the team to advance the goals and objectives of the team. In situations where team members are not communicating, this circumstances could engender undue stress, tension and mistrust among the participants of the project. This portends to deflate the drive, morale and productivity of team members. Therefore this can lead to loss of time, loss of project resources and create ineffective scheduling and planning continuum. This confirms a research carried out by Wright (1997) which demonstrates that consistent communication flow among project participants helps to monitor, detect, and correct deviations and errors during the course of a project. An effective team bears resemblance to effective communication among the members within

the team, lack of it creates disloyalty. Bender and Septelka (2010) proved that effective teams can work through breakdowns in communication by developing and promoting open and clear communication amongst its team members. unfortunately a well-defined and cut out line of communication

traditionally creates social barriers that makes integration of teams very difficult, on the contrary it is worthwhile to create a conducive atmosphere where issues can easily be discussed without let or hindrance. Brewer (2001) posited that ineffective communication among project parties results in constructability problems resulting in lack of coordination between translation of project designs to the actual site work results in challenges. With the advent of high-tech ICT devices, monitoring and tracking scheduled project performance has become less sophisticated and has made communication amongst team members quiet easier, these friendly devices permits projects to be controlled twenty-fourhour-seven even when members are not collocated. As friendly and portable as these devices are they can easily lend themselves to abuse and those who utilize them must reflect carefully before they attempt to proceed with their use.

2.5 Cooperation

Cooperation is described as shared or correlative and joint actions taken by firms or individuals in an interdependent relationship to achieve mutual or singular outcomes with expected reciprocation over time. Cooperation demonstrates the desire of parties to join their skill, ideas and actions together beyond personal commitment towards building a relationship with others and is a harbinger for continued interdependent relationship. Cooperation has been conceptualized as a multidimensional construct including: resource/information sharing, joint action, harmony and flexibility. Common goal and joint actions between associates probably leading to increased contentment and dedication. But

unfortunately disjointedness within the construction industry has denied cooperation among project participants; this has prevented individuals as well as organizations from sharing knowledge among themselves. Normally instead of achievements being shared collectively some groups typically one particular professional people would want to be identified with those achievements and this ill-fated tradition has undermined the mutual trust among project parties undermining the spirit of cooperation that would have increased performance among project team members. The other issue pertinent in the industry is ineffective joint action which is often referred to as the project culture (Rahman and Kumaraswamy 2004). This disincentive is revealed in many forms which are brought unto the project, there are various sources of cultures that are brought to play in the project; and these are the firm operating culture, personal culture and trade culture which creates imperceptible barriers that persist in professional and trade lines. To borrow a sociological maxim to further explain professional barriers that undermine cooperation in project team Freidman (1994) and Larson (1977) called this „professionalization“ specifically „market project“ in which professionals engage to create and control a market for their professional expertise that is utilizing their skills and knowledge as a means of securing future prospects. Because of these tendencies cooperation is very lacking in the project environment in the construction industry.

2.6 Social Interactions

Social relationships are defined as the level of mutual interpersonal friendship and liking shared by the dyadic relation. Forging a common relationship among people makes it easier to see the effect of personal or emotional elements on social ties. People interaction is a prerequisite for building friendships and close interpersonal relationships. The greater the bond of closeness there is, the greater the relationship would be. Friendship aids people with

diverse backgrounds to find a common identity in dealing with sociocultural changes that take place between space and time in fusing their respective social values in a way which promotes understanding and empathy, personal loyalty and affection. Socialization helps to build teamwork. A series of informal social functions in the work environment allow the project participants to meet and discuss personal issues not directly related to the project. The informal activities can include pleasure trips, sports activities, parties, cookouts and others, which allow the participants to interact on a more personal and social level. When togetherness blossoms, the work environment becomes a place to see friends as well as make a living. Teams pass through many growth stages and as a social organism it is bound to have its ups and downs through its project cycles, at some stage relationships would experience friction and slip into difficult times, therefore it is significant to recognize when team relationship is strained so that corrective action would be taken to reverse these mid-life crisis. It is important for project teams to avoid members getting into each other both in verbal and physical altercation to keep the health of the team unblemished and intact to maintain the body of the team pursuing the set targets of the project and fulfilling the business objectives of the client that has brought parties together. In such circumstance leadership must be proactive and endeavor to prevent feuding individuals working together on giving task, as much as possible if it calls for assigning them to different locations leadership should not hesitate to do so.

Bender and Septelka (2001) confirmed this when it indicated that leadership should prevent individuals getting into a letter writing battles and an overly restrictive interpretation of the specifications. Also too much effort documenting „,what happen“ and „,who did what to who“ instead of reaching compromise and moving forward are counterproductive to smooth project progress. When battles between team members occur all sides lose because

the focus is on the battle at hand instead of focusing how to solve problems and working through them.

It is worth the pain to try and understand other persons position in extreme times of provocation and empathize with them to provide the necessary avenue for reconciliation so that a solution can be reached.

2.7 Trust/ Trustworthiness

The importance of trust to the project process has been identified by researchers as one of the measure in defining the character of interrelationship between people or organization found mostly within the project environment. In this wise, it is logical to argue that trust has a positive valence on the interpersonal as well as interorganizational relationships and consequently determining the fate of projects (Munns, 1995; Mayer, 1995 and Larson 1977).

Trustworthiness in a sense, can be perceived as an unrestrained confidence besides the over reliance on contractual relationships among project parties. Trust can be seen as a believe held by an individual towards another person, it is relational and depends mostly on attitude observed about another person, most of the time trust evolve after a person has been able to handle daunting challenges and that person has been able to proof positive to their commissioner's expectation. Das and Teng (2001, cited in Nzekwe-Excel, 2010) defined trust as a positive expectation in relation to the other party in an uncertain condition. Trust is the magnet that pool people and organizations working together in any endeavor, trust is essential in working together as a team in the best interest of the project (Baiden et al., 2006). Trust is the confidence that is reposed in another person because expectation has been met repeatedly and each person is convinced that members are reliable in fulfilling their obligations. Inferentially, trust can be thought of as a hopeful reliance that exists among two or more individuals as a result of familiarity in previous engagements.

2.8 The Effects of Conflict in Project Teams

According to Kumaraswamy (1998) construction conflict could be defined as “a dispute that exist when a claim or assertion made by one party is rejected by the other party and that rejection is not accepted. The risk infested nature of construction makes conflicts a common feature in most projects, in that regard conflict management should become part and parcel of construction projects so that its occurrence and resolution could be immediate. Most primary sources of conflict emanate from existence of error, defective work, failure to count the cost of an undertaking resulting in default, changed situations, rejection by client and other people involved in the project. Minimal levels of task and team conflict also produce higher participant satisfaction. However, conflict resolution with an extreme relationship cannot produce the highest level of participant satisfaction either. Higher team and task assignment can stimulate and solve the conflict amongst project participants. Literature abounds to support the conviction that moderate level of team conflict can improve satisfaction until a certain level beyond which the satisfaction level diminishes as conflict escalates. Leung et al. (2002) illustrated this through the cognitive value-goal-conflict model, that a suitable level of conflict could indeed improve participant satisfaction. Conflicts provides opportunity for project participants to think through ideas, produce higher quality solutions, deliver better performance and improve team effectiveness (Hoffman, 1959; Rahim and Bonona, 1979). To optimize the level of satisfaction, team conflicts could be instigated at the goal setting phase and resolved among project participants by using the integrated style, neutral demeanor directed toward emotionally balanced attitude and job related significance. A project said to be successful only when the participants feel overall satisfaction from the project outcome. Satisfied participants would be willing to work together again with the same team (Leung et al 2004). In recent years construction conflicts has escalated rapidly and in order to justify project satisfactory

performance those negative values must immediately be nib in the bud, to concretize bond of loyalty in order to transform otherwise volatile conflict related disputes into improved participants satisfaction. It is suggested that beneficial conflicts is more effective in team tasks that involve greater level of interdependence. On the other hand, if conflict are focused on interpersonal relationship rather than related to the tasks, it inhibits team information processing and undermines team satisfaction and performance.

2.9 Team Building Practices in Construction Project

A team is a group of people, who are interdependent. When members are not interdependent, then they can only be termed as a group. According to Slater (1998),

"Teamwork is synergistic either you help make it or the lack of it will break you." Groups at work are complex, dynamic systems that change over time. These systems are defined by a set of relations among the members who compose them, the work they perform, and the tools and procedures by which they accomplish their work. The most basic feature of a group, what makes it recognizable as a particular group at work is its membership.

Changes are experiencing in recent years in construction industry, and these changes have spirally increased the complexity of construction processes, highly fragmented, very adversarial and resulting claims and litigation on a dramatic rise throughout the construction industry(Slater, 1998). The researchers working in construction industry are trying to find out best way to overcome those problems (Cheung, 1999) have found interorganizational teamwork has a positive correlation with overall project performance and project participants' job satisfaction in the construction industry. In reference Chan et. al. (2001) research, teamwork includes sharing clear understanding of functional and technical performance required, understood fully own roles and duties by the participants, sharing

common project goals, fully cooperation, adequate communication, high degree of trust, resolving conflict quickly.

A construction project team usually comprised of clients, project managers, designers, subcontractors, suppliers, sponsors, users and the community at large. As cited in Rahman and Kumaraswamy (2004), many researches like Latham (1994) and Egan (1998) have identified the self-destructive trends in construction industry and suggested remedial measures to arrest and reverse them.

Team building is difficult and often lead to poor performance and highly unstable (Uher, and Toakley, 1999). Failure of teambuilding could be the result of several factors. They are: many team alliances are stillborn, perception gap between expectations and results, lack of continuous open and honest communication, lack of intimacy, issues allowed to slide and escalate, unwillingness to compromise, lack of empowerment in the client's controlling bodies, dealing with client's large bureaucratic organizations, controlling body's lack of technical knowledge, and project team's relative autonomy and the parent organization's desire for control. High team conflict almost destroys the teamwork and relationships among the team members. Through a study in Leung, et. al. (2005) revealed that conflict level in the decision process has the direct relationship. Higher task conflict induces an emphasis by participants on relationship maintenance.

Formal teambuilding in the early stages in construction projects are followed by informal activities such as away days or social events happens to be main ways of sustaining integration or preventing stagnation (Bresnen and Marshall, 2000). A study by Bresnen and Marshall (2000) in some projects found out that the construction field is experiencing enthusiasm to skepticism. In one hand, team building had helped groups through formative early stages, promoting group identity and cohesion, encouraging feelings of ownership in

the project and helping avoid the 'steep learning curve' where early team availability had not been possible; however in the other hand, the real construction projects, usually noninvolvement of lower hierarchical levels and other subsidiary organizations, for example subcontractors have not been able to diffuse interpersonal relationships based on respect, trust and openness stimulate the development of teamwork, win/win spirit and shared goals. These are the essential components that encourage the development of group synergy, which in turn generates new ideas, explores new concepts and shift paradigms (Uher and Toakley, 1999).

Some of the recommendations of the study (Bresnen and Marshall, 2000) were dramatic cultural changes in participants, cooperation and collaboration through different team working approaches such as partnering and alliancing. Contracting parties often work at arms length in disjointed relationships, usually motivated by divergent objectives and hidden agendas. In this regard, Lownds (1998, cited in Chan, Ho and Tam, 2001) has voiced to bring construction supply chain team together under a one team concept to optimize benefits.

Referring from Bresnen and Marshall (2000) has suggested some measures to organizing and managing the teamwork in construction sector. They are: layered team structure, decentralization to promote self-governing and self-policing team, joint project office, fully integrated team, strong personal contact, and use of sophisticated information technology. In Stanearth (2005), he proposed seven tips for the improvement in interpersonal relationship to avoiding and ultimately managing and resolution of conflicts. They are:

- be proactive instead of reactive,
- be slow to anger-especially over petty issues,
- instead of telling people they are wrong, point out mistakes indirectly
- look for some type of common ground as soon as possible,

- if you find that you are in the wrong , admit it,
- admit one of your own poor decisions before pointing out a similar error by others,
- mend fences whenever possible.

2.10 Disjointed Construction Project Teams

The construction project team is a peculiar organization in that it is characterized by disintegration, that is, separation of product design and production process (Nam and Tatum 1992, Puddicombe 1997), temporariness of the organization (Cherns and Bryant 1984, Reve and Levitt 1984, Mohsini 1989, Mohsini and Davidson 1992, Munns 1996), and interdependence among participants (Higgin and Jessop 1965, Mohsini 1989). These characteristics influence how participants of the project conduct their respective activities and interact with each other. This interrelationship ultimately determines overall project performance and individual participant satisfaction. Close co-ordination and good working relationships among project participants have been found to be the most important factors contributing to perceived project success and collective satisfaction (Baker *et al.*, 1988).

Moreover, project satisfaction can be enhanced by a high degree of co-operation between participants Smith and Wilkins (1996), Egan (1998). In this context, success means that certain expectations for a given participant were met, whether this is the client, the contractor, or the designer (Sanvido *et al.*, 1992). Unfortunately, good relationships among participants are rarely found (Smith *et al.* 1998). Participants are often involved in protracted contractual disputes leading to costly settlement, arbitration or legal action. This adversarial nature is, of course, far from the expectation of participants. One of the main reasons why this evolves may be that each participant has his or her own „agenda“ for a particular project, which can conflict with those of other participants (Gardiner and Simmons 1992). Each

participant may have goals or success criteria that are different from those of others (Cyert and March 1992, Sanvido *et al.* 1992, Naoum 1995). In this case, clients' requirements often become nebulous (Barnes 1988). However, failure to appreciate other participants' goals and requirements can result in inter-organizational conflicts and contractual disputes. To satisfy their own objectives and improve overall project performance, each participant should realize the importance of other participants' objectives. This may seem idealistic to some extent, but is a truism all the same.

2.11 Aligning Participants Needs to Project Goals

To examine the interactions between construction teams, concerning regard to overall contentment of parties, satisfaction of each person need to be digested. As a consequence, the whole of these individual satisfaction characteristics will bring about team satisfaction. Within the background of team integration and the interaction between its members, it is important to put away the personality of the individual or corporate identity and focus interest on achieving team objectives. In this context, the team goals will show how the team goals and members from different firms will be forging ahead together in order to attain those shared collective objectives (Baiden, et al. 2009, Fischer 1989, Glagola and Sheedy 2002, Knight 2008, Koutsikouri, et al. 2008, Kumaraswamy, et al. 2005, Martin and Songer 2004, O'Connor 2009, Rahman and Kumaraswamy 2004, Tang 2001, Thompson and Sanders 1998, Busby Perkins and Will and Santec Consulting 2007). For this basis, „soft skill“ traits, that is; maturity, organization behaviour and sociology may be important to all members in the team fostering a shared project characteristics among themselves. Researchers have seen that satisfaction is a compound and multi-dimensional perception (Linder-Pelz 1982; Oliva *et al.*, 1992; Bendall-Lyon and Powers 2004; Lovaglio 2004), showing that contentment in a project can be thought about and understood based on its nature and variables. For example, each scheme of project activities has its own peculiar client needs. Therefore, it is central that the contractor, for

instance, sees and appreciates employers' variables and characteristics for satisfaction, keeping it in mind that employers' wants and requirements changes it is then that effort may be taken to meet these needs by constant examination and assessment (Torbica and Stroh 2000; Kärnä 2004) of the satisfaction points. The equivalent works for the employer to understand what the contractor needs are. This is to say that, a good list of employers and participants and their expectations is an excellent point for progress of construction undertaken and head start for high employer and team member satisfaction.

Egemen and Mohamed (2006) opined that a good understanding of team members "list of needs" is seen as a precondition for project achievement in the construction industry. Furthermore, though Smyth (1999, cited in Dulaimi 2005) argues that constant examination of participants' needs is not applicable in the construction sector, constant assessment of the satisfaction traits is important to enhance satisfaction of the construction participants. This is because these characteristics for satisfaction are known to change as the project advances. In addition, the significance attached to the satisfaction factors change with the type of client involved with the project (Egemen and Mohamed 2006).

Satisfaction traits form bases upon which satisfaction scales and strategies are measured. The construction industry need to examine the various satisfaction characteristics to ensure complete satisfaction. According to Karna *et al.* (2004), though a client is satisfied with the whole project delivery, he may not be satisfied with a definite delivery. More so, client satisfaction is achieved by combination of prompt actions to accomplish clients objectives and constant upgrading of the item or service (Jonsson and Zineldin 2003). Therefore, satisfactory and timely appreciation of the factors that impact satisfaction would lead to maximum satisfaction (Karna 2004; Torbica and Stroh 2001).

2.11 Project Team Satisfaction

The construction project team is a collection or group of individuals or organizations that come together to achieve a given goal or deliver a project. Uher and Loosemore (2003) define a team as a collection of committed people with specific skills, abilities, and independent roles who work together in an environment of trust, openness and cooperation towards achieving common goals. The project team is a temporary multiorganization (Cherns and Bryant 1984, Reve and Levitt 1984, Mohsini 1989, Mohsini and Davidson 1992) that undertakes construction projects for the client organization.

Traditionally, main participants of the project team are the client, the contractor and the architect. These participants appoint persons and teams to represent their organizations in the project integration process. The project participants and requirements are determined by the nature and type of construction project. In addition, the construction project team varies in its make-up depending on the given stage of the project. However, some participants are present at almost all the stages of the project. According to (Uher and Loosemore, 2003), the main client and the project manager remain in the project process from beginning to the end.

In order to ensure the satisfaction of the client, the requirements of every participant involved in the project need to be recognised and understood. Furthermore, researchers have over the last decade proposed the satisfaction of other project participants as an important measure and indicator for success in the construction sector (Parfitt and Sanvido 1993; Cheung *et al.*, 2000; Chan and Chan 2004). Similarly, the annual report of the Construction Industry Development Board (2008) highlights contractor satisfaction as one of the key indicators for measuring completed projects. The report further highlights the perceptions of contractors in terms of how satisfied they are with the clients and the projects in general. This indicates that the satisfaction requirements of other project participants,

example contractors (in this case) are now being considered as indicators for measuring the construction industry's performance.

Therefore, an acknowledgement of each participant and their requirements is essential to improving project satisfaction in the construction sector. To achieve this, assessment frameworks and systems that would directly measure the satisfaction link between the project owner and other project participants will be explored. This would require analyzing the impact of integrating these participants and their satisfaction attributes, with the aim of improving the satisfaction levels of the project team throughout the project life cycle.

2.12 Project Team Interdependence

The relationship between participants can also be partly described as a (Leunget al., 2005) relationship. That is, for a participant to perform their function or accomplish their goal they must conduct their task in conjunction with another (Bates 1960). Bates (*ibid.*) argued that the difference between reciprocal and conjunctive relationships is in terms of goal orientation. In the former, all participants have a common goal. However, in the latter each participant has an individual goal that can be distinguished from other participants' goals. Thus, it can be demonstrated that participants of the project team each have their own goals, but also share the common goal of delivering the final product, i.e. the project under construction, to the client's satisfaction. According to basic organizational theory, a particular organization is composed of interdependent parts (Thompson 1967, Silverman 1970). Thompson (1967) discovered the types of interdependence and co-ordination between such parts. The nature of interdependence and co-ordination between participants of the coalition can be categorized as reciprocal interdependence and co-ordination by mutual adjustment.

Reciprocal interdependence is where the outputs of a participant become the inputs of others and vice-versa. Thompson (1967) contended that if an organization is involved in reciprocal

interdependence then it would also include pooled and sequential interdependence (considered as lower level types of interdependency). Pooled interdependence occurs when each part of an organization is least dependent on other parts; but each part discretely contributes to the whole organization and is supported by the whole. Sequential interdependence (which is less dependent than reciprocal interdependence but more dependent than pooled interdependence) is where an outcome of one part of the organization becomes an input for another part; but the output of the latter does not become the input for the former. Each type of interdependency requires a specific type of co-ordination. Pooled interdependence requires co-ordination by standardization. Sequential interdependence needs co-ordination by planning. Co-ordination by mutual adjustment, which is required by reciprocal interdependence, involves effective communication of new information and decisions during the action (i.e. construction processes). Moreover, the more variable and unpredictable the situation, the greater the reliance on co-ordination by mutual adjustment (March and Simon 1958 cited in Thompson 1967). It may be concluded that the more complex the interdependency, the more complex the interactions and the interrelationships between parts of an organization become. An example in the construction project environment would be where the contractor requires drawings from the architect; who in order to keep up to date with conditions on site, requires certain information from the contractor which can then be incorporated into drawings. This example illustrates the reciprocal interdependence and the co-ordination by mutual adjustment, which requires appropriate communication and decision-making.

Moreover, Mohsini (1989) argued that interdependence can be symmetrical or asymmetrical (i.e. both or only one of the two concerned organizations has incentive to coordinate), and it can range from high to low. Symmetrical interdependence is where both participants comply with each other's requirements. Contrarily, asymmetrical

interdependence occurs where one participant has to comply with another participant, but the latter does not have to comply with the former. Symmetrical interdependence between organizations may promote collaboration while asymmetrical interdependence may lead to conflict.

2.14 Attributes of Project Leadership

A project team leader or project manager for that matter is one key personality in the team that determines the success and performance of individuals on the project. The success of the project depends on how effectively this individual manages time, cost, quality, project resources and performance expectation. To be able to achieve higher results and also win the unflinching support and enthusiasm of team members, a project leader must demonstrate and exhibit excellent leadership skills. What this role calls for in project managers is for them to be technically astute, proficient, balanced, visionary, trustworthy, power to innovate, proactive, reliable, able to set achievable goals, manage people and ready to solve problems. One important attribute of a project leader is that they should motivate and inspire the project team members to buy into their mission and convince them to take ownership for their respective roles and task assignments.

Construction projects brings together many parties whose obligations are bound by contractual and legal relationships between and among participants but unfortunately these contractual relationships does not automatically evoke commitment and wherewithal to complete the project as stipulated by contractual terms. These obviously erects well defined lines of contractual boundaries of individualism without parties making conscious effort to integrate their roles into a succinct relationship that inures to the benefit of all for collective goal achievement, performance and project success. Construction teams are akin to a mass of interconnected network of relationships in which two or more parties incidentally with

different backgrounds, values, and goals agree to „live“ and work together in the project environment for mutual benefit. With these picture, project team members assume a shortsighted mindset that look at their immediate roles, tasks and responsibilities without due regard to the need of others. The situation created under these circumstances is one which is bereft of team cohesion and everything seems to be in an amorphous chaotic space. It becomes imperative to have an individual who can be a role model to lead, represent and align the values and aspiration of team members to bring out effective team performance that will instill team spirit, unity and a common sense of purpose, most teams contain individuals who are primarily responsible for defining team goals and for developing and structuring the team to accomplish these mission Nygren and Levine(1996, as reported in Zaccaro et al. 2001).

The leader must be an individual who by his experience, technical and soft skill, commands a good measure of respect, has flair for managing people, understands team relationships, conversant with the project environment and appreciates contractual relationships. That notwithstanding, the person must be a problem solver, and above all very innovative. Team leaders represent a spearhead that give direction and hence path that teams or organizations take in annexing team goals. To this end, the expectation of team members and every one that matter in the project must be seen to be doing a fair share of their task, emphasizing common goal achievement to the team. The project team leader must be able to set clear and well defined goal constraints which are attainable with a clear deadline, they are able to motivate members. These attributes are important because team people can maximize their output when their satisfied with the capabilities of the project leader.

2.15 Chapter Summary

Literature traversed, revealed an incredible deal of attributes which are needed by project parties in order to whip-up their enthusiasm to perform and ensure a coordinated effort at enhancing individual contribution to the team and above the achievement of team goals and objectives. The overarching attributes essential for team member satisfaction among other things included communication, interpersonal relationships, trust and cooperation. The rest are team goals and objectives, conflict and its management, team building and leadership, it will only suffice to say that the list is endless.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter of the work addresses the processes which were followed to obtain field data from subjects or individuals, the information from whom is critical in this study. The chapter specifically addresses the research design, the study population, the sampling procedure and sample size, the data collection procedure, data collection instrument, and the approach to data analysis.

3.2 Research Design

Research design gives the blue print of any research study and therefore helps researchers to keep in mind a comprehensive plan by which the study would be undertaken. The design adopted in carrying out this study is the cross-sectional survey. This is owing to the fact that the study covers any such professionals who are concerned with construction project delivery. The cross-sectional survey is able to provide data from a range of individuals from varying backgrounds. The study is also a quantitative study and thus uses numeric descriptions of the data to explain phenomena and relationships between phenomena. Data

obtained will therefore be aggregated and categorized with numeric descriptions to allow for various statistical tests.

The key focus of this study is project participants' satisfaction on construction project delivery. The project participants represent the professionals who are often involved in construction project. These professionals are engaged in this study resulting in construction of their satisfaction with previous or current construction project delivery. Satisfaction levels of the project participants were measured using fifteen satisfaction parameters. These include communication, team goals/objectives, quality specifications, competence, payment, project schedule, response to complaints, health/safety, procurement, project/work variations, estimates, team integration/relationship, cost of project, conflict/conflict resolution, and leadership.

3.3 Study Population

The population of this study is defined as all professionals who are involved in managing and executing construction projects. Without prejudice, the population comprises such professionals as civil engineers, contractors, quantity surveyors, architects, client organisations, project managers, etc., irrespective of their gender or age. Thus, they may have varying background characteristics, but they all describe the study population.

3.4 Sampling Procedure and Sample Size

When a population contains a number of units and you require a sample of the population, then a simple random sample is one in which all possible sample has equal chance of being selected. This idea was used to carry out the sampling process in reaching out to the number of respondents earmarked for the survey. It is justifiably noted that in construction projects the civil engineers, contractors, quantity surveyors, architects, client organisations, and project managers perform key roles. The sample size therefore was based on the above

mentioned groups or categories. The method used in establishing the sample size for each group of respondents was simple random sampling using the Kish (1965) statistical formula as stated below:

$$n = \frac{n^1}{(1 + n^1/N)}$$

Where $n =$

sample size

$$n^1 = \frac{S^2}{V^2}$$

$N =$ population size

$S =$ maximum standard in the population elements
(total error = 0.1 at a confidence level of 95%)

$V =$ standard error of sampling distribution = 0.05

$P =$ Proportion of population element that belong to the defined class

$$S^2 = P(1 - P) = 0.5(1 - 0.5) = 0.25$$

3.4.1 Sample Size for Civil Engineers

The Ghana Institution of Engineers has 1144 civil engineers who are registered with the institution and are in good standing to practice civil engineering for year 2014. Out of this number about 55% of these numbers are operating from Accra. $N = 0.55 \times 1144 = 629.2$

$$n^1 = \frac{S^2}{V^2} = \frac{0.25}{0.0025} = 100$$

$$n = 100 / (1 + 100/629.2) = 100/1.1589 = 86.28$$

3.4.2 Sample size for Project Managers

The Project Management Professional Institute branches in Ghana have 176 certified members. $N = 176$
 $n = 100 / (1 + 100/176) = 100/1.568 = 63.76 \equiv 64$

3.4.3 Sample Size for Architects

Ghana Institute of Architects, July 2014 has 800 members who are in good standing, out of these number about 50% are working in Accra. (GIA, July-2014) $N = 0.50 \times 800 = 400$ $n = 100 / (1 + 100/400) = 100/1.25 = 80$

3.4.4 Sample Size for Client Organizations

The questionnaires were sent to selected corporate organizations both public and private that undertake construction projects for and on behalf of their organizations. Fifty (50) such organizations were selected in Accra.

3.4.5 Sample Size for Quantity Surveyors

The Ghana Institution of Surveyors – Quantity Surveying Division has 201 members in good standing as July, 2014 (QS Division; July, 2014). $N = 201$ $n = 100 / (1+100/201) = 100/1.497 = 66$

3.4.6 Sample Size of Contractors

From the website of the Ghana Association of Building and Civil Engineering Contractors, there are 720 contractors registered with the association who operating in Accra. $N = 720$ $n = 100/(1+100/720) = 87$

Table 3.1: Sample Size of Hypothetical Project Team

Respondents	Sample Size	Targeted Respondents	Sample recovered	Response rate (%)
Civil Engineers	86	51	25	49.0
Project Managers	64	38	24	63.2
Architects	80	48	30	62.5
Client Organization	50	30	28	93.3
Contractors	66	39	35	89.7
Quantity Surveyors	87	52	20	38.5

Total	423	258	162	62.8
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By way of analysis of response rate, the researcher targeted not less than 50% of the respondents for each category of people who will answer the questionnaires sent to them.

Moser and Kalton (1976) opined a target sample of not less than 40% is adequate, and therefore regarded as acceptable. The response rate was also found to be high at 62.8% and thus enhancing the representativeness of the target sample.

A total of two hundred and fifty eight (258) questionnaires were sent out to the six groups of respondents Civil engineers, Contractors, Quantity surveyors, Architects, client organizations and project managers of which one hundred and sixty two (162) were received representing a response rate of 62.8%. Moser and Kalton (1976) asserted that results of a survey could be bias and of little value if the response rate is less than 30% – 40% this fact indicates that the response rate is adequate.

3.5 Data Collection

The scope of the study was limited to Accra for the reasons that, this city represent the foremost location in Ghana where the bulk of economic activities take place. Given its strategic location, more than 60% of registered contractors, and other elite organizations tend to operate officially in Accra region (Ayisi, 2000; Ahadzie 2007). The second largest city in Ghana, accounts for some 12% of all economic activities in the country whilst the remaining eight takes 30% (Ahadzie, 2007).

These facts outlined earlier take a close resemblance to the number of consultants and other engineers who are operating in this city. Another reason why this location was chosen for the survey lies in the evidence of increased construction activities in this area (Dogbegah, 2009).

The approach adopted for the data collection involves desk study which constituted an essential part of the research, in that it set out the stage for the design of field survey instruments using questionnaires, and informal interviews (Fadhley, 1991) with industry professionals. The field survey involved the collection of empirical data. It is important to emphasize that the desk study identified a tall list of project teams' satisfaction factors by different authors from different geographical and research backgrounds. Other data sources included articles from print media, magazines, journals, and other secondary literature. The items of project team satisfaction included in survey instrument were extracted from previous research carried out by authors in the field of construction, project management, project performance, psychology, marketing and other resources that dealt with team satisfaction. Some of the authors are given in Table 3.0.

Table 3.1.2: Sources from which scale of Questionnaire were obtained

Author	Amzy2012	Baiden 2006	Basadur 2001	Isik 2009	Leungetal . 2004	Nzekw-Excel 2010	Thompso n 2010	Zuoetal 2009
Elements of satisfaction								
Communication		X			X	X		
Team Goals	X	X			X	X	X	
Quality/Specs			X	X	X	X		
Competence		X	X	X	X	X	X	
Payment					X	X		
Project Schedule	X	X			X	X		
Responds/Complaints					X			
Health & Safety						X		X
Procurement					X			
Project work variations					X	X		
Estimates								
Team Integration	X	X	X		X	X		
Cost of Project					X	X		
Conflict/Conflict Resolution	X	X			X		X	
Leadership in Teams		X		X	X		X	

3.6 Data Collection Instrument

The instrument used in the study was the questionnaire. Before the questionnaire was developed, it was expedient to first find the information to be gathered so that important questions are elicited (Oppenheim, 1996 as cited in Dogbegah, 2009). At the time that the survey questionnaire were designed, the draft were distributed to few researchers and industry practitioners having long years of practice with characteristics close to the targeted respondents. By this exercise the whole questionnaire was subjected to close scrutiny and irrelevant portions were expunged, this helped to re-design the questionnaire, making it more concise to put emphases on pertinent issues. The experts' contributions were then integrated into the whole work to arrive at the final outcome of the questionnaire. The questionnaires were organized in a closed-ended type questions, the Likert scale response was used to measure the level of respondents' opinion. The questionnaire were pre-tested as posited by Bell (1999) and Dillman (2000) and was also followed with an informal face-to-face interview with small number of the industry experts to get an insight into issues of team satisfaction in the construction industry; this gave a profound insight on the subject. The format of the questionnaire was designed to appeal to respondent's ease to answer the questions.

The questionnaire was designed based on works of other researchers in the field on project teams to obtain essential team satisfaction factors in construction project management. The questionnaire were scaled into sixteen items with subscale criteria under each scale, at least six subjects consisted items under the subscale. The first part of the questionnaire related to brief demographic information of respondents, which were about the number of years respondents have worked in their various fields of endeavor. With next item which follow, respondents were requested to indicate their satisfaction level in previous or current projects

they have worked on in 5-point Likertscale, intended as the dependent variable. The scaled items were communication, team goals/objectives, quality/specification, competence, payment, project schedule, and response to complaints. The rest are health/safety, procurement, project/work variations, estimates, and team integration/relationship, cost of project, conflict/conflict resolution and leadership. The instruments were categorized in 5-point Likertscale which was calibrated into 1 to 5; where 1 represented „strongly disagree“, 2 „disagree“, 3 „somewhat agree“, 4 „agree“ and 5 „strongly agree“. The respondents were requested to rate attribute that best described their circumstances.

3.6.1 Questionnaire distribution

Considering the work involve, the questionnaire were administered face-to-face to the respondents by trained research assistance, who were briefed on distribution modalities to ensure targeted subjects of the survey were reached and the needed information obtained.

3.7 Data Analysis

The data collected was collated and entered into data sheet of the Statistical Package for Social Scientist (SPSS) and from which the analysis commenced. The analyses sought to organize, aggregate, interpret data and provide the meanings of results from that data. After the results are presented in tables and graphs, the data is interpreted or explained.

Fifteen (15) key concepts were subject to investigation in this study. These key concepts were measured by several variables to determine the relative performance with regard to the concepts. The key concepts include communication, team goals and objectives, quality specification, competence, payment, project schedule, response to complaints, health and safety/risk/environment, procurement processes, project/work variations, estimates, team integration/work relationships, cost of project, conflict/conflict resolution, and leadership. The principal statistical tools employed for the analysis were descriptive statistics in the

form of frequencies and percentages, mean values and standard deviation analysis to test the relative importance of variables. Reliability analysis using Cronbach's Alpha was conducted to show the suitability of the measures for relationship and determinant analysis. Robust tests of relationship and prediction among variables were conducted using Pearson's Correlation and Regression analysis.

3.7.1 Pearson's Correlation Analysis

Pearson's analysis is a statistical technique used to measure the correlation among variables in a data so that they can easily be interpreted depending on whether they are positively correlated, negatively correlated or no correlation among the variables. For the reason that it is almost impossible to measure an idea of a concept by one variable, and in order to describe such concept intelligibly many variables were used to define the concept of project team satisfaction.

3.7.2 Regression Analysis

The respondents' satisfaction with construction project delivery was regressed on the key concepts identified in project teams' so that how satisfaction depends on project delivery could be known and the predictors of the respondents' satisfaction could be drawn out.

3.8 Chapter Summary

The chapter successfully identified the research design comprising justified procedures and parameters of work that were done to achieve the field work and data collection. Simple random sampling technique was adopted to develop the framework to reach out to respondents targeted to answer the questionnaire. Kish formula (1965) was used to arrive at the sample size for the survey. Two hundred and fifty eight (258) questionnaires were distributed and One hundred and sixty two (162) responses were received. The scope of the study was limited to Accra. The source from which the questionnaire was developed is a

shown in Table 3.1 above. The questionnaire was design in a five point Likert scale, where 1 represented „strongly disagree“, 2 „disagree“ 3 „somewhat agree“ 4 „agree“ and 5 „strongly agree“. The statistical technique used were Reliability analysis, Pearson“s correlation and simple linear regression analysis by making use of the tool of Statistical Package for Social Scientist (SPSS).



CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

In this chapter, the analysis of data gathered from the field of study is presented. One hundred and sixty-two (162) respondents were covered from the field. The data obtained from the respondents was meant to respond to the objectives stated in the introductory chapter of this study, paramount of which is to identify the factors for measuring satisfaction of project participants during construction delivery. Specifically, the study attempts to predict factors that influence project participants' satisfaction. Data have been presented in tables and charts and the approaches employed in the presentation include reliability analysis, descriptive statistics, Pearson's correlation, and multiple regression.

4.2 Profile of Respondents

Figure 4.1 presents a graphical view of the professions of the respondents. Though the profession of many respondents could not be ascertained, there is evidence that several of them were quantity surveyors and main contractors followed by architects suppliers and sub-contractors. Next in the order were designers, engineers and clients with few respondents being project managers.

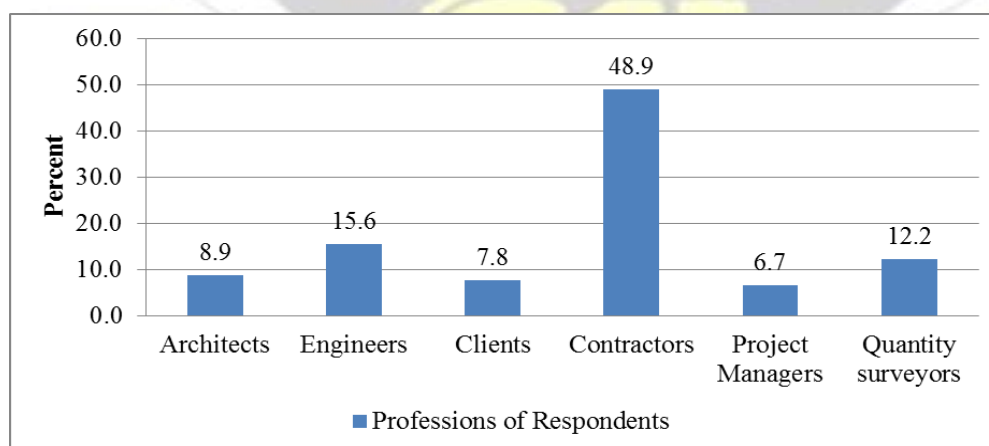


Figure 4.1: Distribution of Respondents by Profession

Source: Field data, 2014

The respondents' years of experience or engagement in construction projects obtained ranged from a minimum of one (1) year to a maximum of forty-seven (47) years as is indicated in Table 4.1. The respondents, on an average, have approximately eighteen (18) years of experience in their field of work.

Table 4.1: Years of Experience (Descriptive statistics)

<u>Years of experience</u>	<u>Years</u>
Minimum	1
Maximum	47
Mean	18
Standard Dev.	10
<u>N</u>	<u>162</u>

Source: Field data, 2014

4.3 Reliability Analysis

In a bid to identify the factors that would predict or determine satisfaction of project participants during construction delivery, the questionnaire used contained, among other questions, 96 statements approval to which is ranked by respondents from a minimum of one (1) to a maximum of five (5) where 1 represents "Strongly Disagree", 2 – "Disagree", 3 – "Somewhat Agree", 4 – "Agree", and 5 denotes "Strongly Agree". Respondents have ranked the statement using the scale mentioned which would be aggregated to provide approval indexes that indicate level of approval of, and the general impressions about different aspects of construction project management. There were fifteen (15) aspects of construction project management which were used as satisfaction constructs, namely, communication, team goals and objectives, quality/specification, competence, payment, project schedule, response to complaints, health and safety/risk/environment, procurement

processes, project/work variations, estimates, team integration/work relationships, cost of project, conflict/conflict resolution, and leadership.

To appreciate the extent to which the constructs are reliable, a reliability test using the Cronbach's alpha coefficient was employed. The Cronbach's alpha coefficient normally ranges from 0 to 1 with the measure becoming more reliable as alpha approaches 1. As a general rule, alpha equal to 0.6 is considered the lower limit less than which measures would cease to be acceptable. Alpha equal to 0.7 or greater is considered acceptable and reliable. The alpha for the individual constructs, as illustrated in Table 4.2, show that the measures for project/work variations, estimates, cost of project, and leadership could no more be reliable hence could be set aside completely from this analysis and, thus, reduces from 96 to 77 the statements on the questionnaire eliciting respondents' approval.

The alpha of 0.863 and 0.812, obtained for health and safety/risk/environment, and team integration/work relationships respectively, prove to be very reliable measures of construction project satisfaction. Also, payment (0.784), competence (0.765), response to complaints (0.739), project schedule (0.730), conflict/conflict resolution (0.716), and team goals and objectives (0.715) are acceptable and therefore reliable as of procurement processes (0.628), communication (0.612), and quality/specification (0.606). Accordingly, the reliability test for all the constructs or measures used in this study provides a Cronbach's alpha coefficient of **0.931**. All these constructs were retained leaving four (4) constructs that fell short of reliability, as shown in Table 4.2, and were thus deleted from subsequent analysis.

Table 4.2: Reliability statistics

Reliability test	N of statements	Cronbach's alpha	Decision
Health and safety/risk/environment	10	0.863	Retained

Team integration/work relationships	10	0.812	“ “
Payment	2	0.784	“ “
Competence	9	0.765	“ “
Response to complaints	7	0.739	“ “
Project/schedule	6	0.730	“ “
Conflict/conflict resolution	5	0.716	“ “
Team goals and objectives	7	0.715	“ “
Procurement process	7	0.628	“ “
Communication	7	0.612	“ “
Quality/specification	7	0.606	“ “
Overall	77	0.931	
Project/work variations	2	0.499	Deleted
Cost of project	7	0.403	Deleted
Estimates	2	0.247	Deleted
Leadership	8	0.130	Deleted

Source: Field data, 2014

4.4 Satisfaction with Construction Projects

Satisfaction with construction projects was assessed by the communication practices, team goals and objectives, quality/specification, competence, payment, project schedule, response to complaints, health and safety/risk/environment, procurement processes, team integration/work relationships, and conflict/conflict resolution in each of which case respondents indicated their approval rate in the way things had been done. Approval ratings were elicited on a maximum scale of 5 to give an average satisfaction index that would be

used for comparisons. The closer a satisfaction index is to the maximum scale of 5, the better the satisfaction.

4.4.1 Communication

The approval rate obtained for communication in construction projects delivery gives the impression that there have been good initiatives toward communication in the project team. The overall approval rate of 3.79 (on a maximum scale of 5) obtained for communication suggests that respondents, generally, „agreed“ with the practices at communication within the project team. Specifically, the approval rates ranged from 3.43 (somewhat agree) to 4.41 (agree). As presented in Table 4.3, respondents most strongly agreed with the fact that information is shared freely without restrictions to any profession/unit (Mean = 4.41, Std. Deviation = 0.65). They also agreed with the fact that parties demonstrate an open and honest communication flow (Mean = 4.07, Std. Deviation = 0.91), that email/paperless communication is effective (Mean = 3.97, std. Deviation = 0.65), and that frequent meetings did not retard productivity (Mean = 3.61, Std. Deviation = 1.05). In spite of these, within the approval rates, respondents most strongly disagree with meeting are not called at short notices (Mean = 3.43, Std. Deviation = 1.31), and though this is so, a large (second largest) standard deviation (1.31) indicates that there were some quite disagreeing views regarding short notices of meetings. In-between the extremes respondents agreed that open communication builds trust (Mean = 3.52, Std. Deviation = 1.17), and that communication flow is honest, consistent and friendly (Mean = 3.51, Std. Deviation = 1.40), with the largest standard deviation indicating some strongly disagreed with this view. Table 4.3 present the results in detail.

Table 4.3: Communication (Descriptive Statistics)

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
-------------------	----------	-------------	-----------------------

Information is shared freely without restrictions to any profession/unit	162	4.41	0.65
Parties demonstrate an open and honest communication flow	162	4.07	0.91
E-mail/paperless communication is effective	162	3.97	0.65
Frequent meetings did not retard productivity	162	3.61	1.05
Open communication builds trust	162	3.52	1.17
Communication flow is honest, consistent and friendly	162	3.51	1.40
<u>Meeting are not called at short notices</u>	<u>162</u>	3.43	1.31
<u>Overall approval (satisfaction)</u>		3.79	0.60

Source: Field data, 2014

4.4.2 Team Goals and Objectives

Concerning team goals and objectives of the project team, there was a moderate regard. The overall approval index pegged at 3.42 – approximately moderate (somewhat agree). The respondents most strongly agreed (Mean = 3.84, Std. Deviation = 1.05) with the view that project participants understand team goals and objectives. On the other hand, respondents most strongly disagreed (Mean = 2.86, Std. Deviation = 1.05) with the view that everyone on the project team knows and understands the project goals. In-between these extremes respondents agreed with the view that the project team is committed to achieve team's goals and objectives (Mean = 3.71, Std. Deviation = 1.10), that specific goals lead to higher team commitment (Mean = 3.54, Std. Deviation = 1.08), that higher participation in goals setting leads to commitment (Mean = 3.52, Std. Deviation = 1.11), while the view that task objectives align with project objectives (Mean = 3.39, Std. Deviation = 1.25), and that everyone strives to meet project goals at all times (Mean =

3.10, Std. Deviation = 1.29) earned moderate approval with a few respondent holding different views from this moderate view that everyone strives to meet project goals all the time. The detail results are as presented in Table 4.4.

Table 4.4: Team Goals and Objectives (Descriptive Statistics)

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Project participants understand team's goals and objectives	162	3.84	1.05
Our team is committed to achieve team's goals and objectives	162	3.71	1.10
Specific goals lead to higher team commitment	162	3.54	1.08
Higher participation in goals setting leads to commitment	162	3.52	1.11
Task objectives aligns with project objectives	162	3.39	1.25
Everyone strives to meet project goals at all times	162	3.10	1.29
Everyone on the project team knows and understands the project goals	162	2.86	1.17
Overall approval (satisfaction)		3.42	0.70

Source: Field data, 2014

4.4.3 Quality/Specification

For construction project delivery, quality specification scored an approval index of 3.70 which puts it a little above moderate approval of the respondents. In other words, approximately, respondents „agree“ with the quality/specification in project delivery. Particularly, there was a strong agreement regarding the view that materials and components are according to specification (Mean = 3.99, Std. Deviation = 1.06). Meanwhile, respondents most strongly disagreed with the view that project schedules are detailed and easy to understand (Mean = 3.52, Std. Deviation = 1.22). There is also evidence of the fact that the team ensures there is fewer reworks and defects, that there are fewer defects in delivery and future processes, that the team permits flexible changes or modifications to project designs,

that the satisfaction the end-user experiences with the facility's aesthetics is good, and that features that supplement functions of the

product/facility are good.

A small standard deviation of 1.03 indicates that most of the respondents shared similarly agreed that the team ensures there is fewer reworks and defects while on the other hand, a large deviation of 1.29 shows that there were few views quite different from the fact that features that supplement functions of the product/facility are good. Table 4.5 presents an overview of the results.

Table 4.5: Quality/specifications (Descriptive Statistics)

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Material and components are according to specification	162	3.99	1.06
The team ensures that there are fewer reworks and defects	162	3.77	1.03
There are fewer defects in delivery and future processes	162	3.71	1.11
The team permits flexible changes or modifications to project designs	162	3.67	1.24
The satisfaction the end-user experiences with the facility's aesthetics is good	162	3.67	1.15
Features that supplement functions of the product/facility are good	162	3.55	1.29
Project schedules are detailed and easy to understand	162	3.52	1.22
Overall approval (satisfaction)	<u>Std.</u>	<u>Dev</u>	<u>iation</u>
Source: Field data, 2014	<u>Mean</u>	<u>Mean</u>	<u>Mean</u>

N

4.4.4 Competence

Approval indexes obtained for competence shed light on the fact that there is display of competence in project delivery as respondents were quite certain with it (Mean = 3.84, Std. Deviation = 0.62). There was a strong agreement with the fact that team members have the

necessary expertise and skills to perform the tasks (Mean = 4.22, Std. Deviation = 0.92). Also, respondents agreed with the view that project management/contractor groups have a track record of experience, and that there is opportunity to offer alternatives and innovation as have been presented in Table 4.6. However, respondents least strongly agreed with the view that there are fewer defects in delivery and future processes (Mean = 3.49, Std. Deviation = 1.21), though the large standard gives indication that respondents shared most divergent opinions in terms of this agreement. **Table 4.6: Competence (Descriptive Statistics)**

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Team members have the necessary expertise and skills to perform the tasks	162	4.22	0.92
Project management/contractor groups have a track record of experience	162	4.07	1.05
There is opportunity to offer alternatives and innovation	162	4.03	0.91
The team ensures strategies for managing unforeseen risks are in place	162	3.96	0.96
There are better decision-making strategies due to open and vast ideas	162	3.75	1.08
There is consistency in techniques and procedures	162	3.71	1.19
There is continuous improvement of processes and results	162	3.68	1.06
There is improved transition into the different project stages	162	3.65	1.10
<u>There are fewer defects in delivery and future processes</u>		3.49	1.21
<u>Overall approval (satisfaction)</u>			
Source: Field data, 2014			
		<u>3.84</u>	<u>0.62</u>

4.4.5 Payment

This part of the study looked at approval of respondents regarding payments made in the project. In general, approval with payment was found to be moderate. In other words, the respondents „somewhat agreed“ with activities regarding payments (Mean = 3.28, Std.

Deviation = 1.24). Specifically, respondents felt ambivalent about the view that remuneration is commensurate with output (Mean = 3.19, Std. Deviation = 1.42). Comparatively respondents were more similarly uncertain with whether or not payment is quick and without delay (Mean = 3.38, Std. Deviation = 1.32). Table 4.7 presents an overview of the results.

Table 4.7: Payments (Descriptive Statistics)

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Payment is quick and without delay	162	3.38	1.32
Remuneration is commensurate with output	162	3.19	1.42
Overall approval (satisfaction)		3.28	1.24

Source: Field data, 2014

4.4.6 Project Schedule

In general, the wellness of project schedule appeared to be moderate with an approval indicator of 3.33 (Std. Deviation = 0.76). This was pulled down by the fact that respondents least strongly agreed with the view that project schedules are detailed and easy to understand (Mean = 3.19, Std. Deviation = 1.23).

Areas that respondents strongly agreed with were that unforeseen physical and weather conditions have been considered in project schedule (Mean = 3.49, Std. Deviation = 1.22), and that there is improved transition into the different project stages or phases (Mean = 3.42, Std. Deviation = 1.16).

The smallest standard deviation of 1.04 suggests that the respondents shared more moderate approval concerning the view that project parties respond quickly to meet deadlines (Mean = 3.28). Table 4.7 presents the results.

Table 4.8: Project Schedule (Descriptive Statistics)

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Unforeseen physical and weather conditions have been considered in project schedule	162	3.49	1.22
There is improved transition into the different project stages or phases	162	3.42	1.16
Reports and documentations were prepared within the time given	162	3.36	1.21
Project parties respond quickly to meet deadlines	162	3.28	1.04
Project is completed on time	162	3.22	1.15
<u>Project schedules are detailed and easy to understand</u>	<u>162</u>	<u>3.19</u>	<u>1.23</u>
<u>Overall approval (satisfaction)</u>		<u>3.33</u>	<u>0.76</u>

Source: Field data, 2014

4.4.7 Response to Complaints

The approval indicators obtained for response to complaints ranged from 3.32 to 3.84 on a maximum scale of 5. The overall approval index of 3.58 paints the picture that respondents agree with the propriety of response to complaints in projects. However, the fact that the respondents only moderately agreed (Mean = 3.32, Std. Deviation = 1.18) with the view that there is better management of complaints and response system, and that every person in the organization must be client friendly (Mean = 3.32, Std. Deviation = 1.02) detracts from the propriety of response to complaints. What appeared more acceptable were that interactions are open and friendly (Mean = 3.84, Std. Deviation = 0.92), that the project team chooses the right mode to communicate response (More =

3.77, Std. Deviation = 1.05), that there is better management of clients (Mean = 3.71, Std. Deviation = 0.96), and that the project team demonstrates ability to listen (Mean = 3.71, Std. Deviation = 0.91). The results have been presented in Table 4.9 in detail.

Table 4.9: Response to Complaints (Descriptive Statistics)

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Interactions are open and friendly	162	3.84	0.92
The project team chooses the right mode to communicate response	162	3.77	1.05
There is better management of clients	162	3.71	0.96
The project team demonstrates ability to listen	162	3.71	0.91
Response to complaints, changes or clarifications are quick and productive	162	3.41	1.22
There is better management of complaint and response system	162	3.32	1.18
<u>Every person in the organization is client friendly</u>	<u>162</u>	<u>3.32</u>	<u>1.02</u>
<u>Overall approval (satisfaction)</u>		<u>3.58</u>	<u>0.65</u>

Source: Field data, 2014

4.4.8 Health and Safety/Risk/Environment

The approval rating for health and safety/risk/environment ranged from 3.04 to 3.96 on a maximum scale of 5. The overall approval indicator of 3.59 was obtained which gives the impression that respondents, generally, „agreed“ with the health and safety systems in place. Specifically, respondents most strongly agreed with the view that exceptional efforts were made to establish effective safety procedures, that safety is clearly a priority in project, that there are safer working conditions in place, that project safety inspections are well managed, and that plans for managing unforeseen projects risks are in place. On the other hand, the respondents most strongly disagreed within this category the view that there is less generation of waste. The result is presented in detail in Table 4.10.

Table 4.10: Health and Safety/Risk/Environment (Descriptive Statistics)

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Exceptional efforts were made to establish effective safety procedures	162	3.96	1.02
Safety is clearly a priority in project	162	3.90	1.14
There are safer working conditions	162	3.87	0.92
Project safety inspections are well managed	162	3.84	1.22
Plans for managing unforeseen projects risks are in place	162	3.84	1.15
Safety record keeping and reporting are well managed and documented	162	3.45	1.31
Project safety inspections are conducted throughout the project	162	3.43	1.14
Health and safety procedures are with no incidents	162	3.30	1.49
The site is orderly and neat	162	3.22	1.37
<u>There is less generation of waste</u>	<u>162</u>	<u>3.04</u>	<u>1.55</u>
<u>Overall approval (satisfaction)</u>		<u>3.59</u>	<u>0.83</u>

Source: Field data, 2014

4.4.9 Procurement Processes

The overall approval indicator obtained for procurement processes (3.69) creates the impression that processes were correctly handled more than incorrectly. The approval indexes ranged from 3.45 to 4.00 on a maximum scale of 5. Specifically, respondents most strongly agreed with the view that open competitive tendering is favoured than other. They agreed with the view that sufficient time is allowed for tender, that tender validation is not based solely on cost but quality, and that there exists tender assessment of quality, not just price. The findings are presented in detail in Table 4.11. The respondents least strongly agreed with the view that each stage of the project process is completed on time.

Table 4.11: Procurement Processes (Descriptive Statistics)

Statements	N	Mean	Std. Deviation
Open competitive tendering is favoured than the others	162	4.00	0.97
Sufficient time is allowed for tender	162	3.94	1.14
Tender valuation is not based solely on cost but quality	162	3.70	1.23
There exists tender assessment of quality, not just price	162	3.62	1.15
There exists early involvement of contractor	162	3.59	1.22
Smart and easy procurement route is followed	162	3.55	1.66
Each stage of the project process is completed on time	162	3.45	1.22
Overall approval (satisfaction)		3.69	0.69

Source: Field data, 2014

4.4.10 Team Integration/Work Relationships

The results obtained here shed light on the fact that team integration/work relationships have been moderately good as inferred from the overall approval indicator of 3.44 in this category. The approval indexes ranged from 3.10 to 4.00. The respondents most strongly approved of the fact that there is common support and trust among all members of the team. Additionally, they agreed with the view that focus is place on goals and objectives, and that relationship and contributions to the team is fair and respected. The view that focus is placed on shared goals and ideas, that there are fewer or no conflicts among the project team, that there is no fragmentation of the project team, that there is true commitment, cooperation and understanding of each other's needs, that every member of the team operates with a „no blame“ culture, and that achievements are shared through the team each attracted moderate approval. Respondents most strongly disagreed with the view that there is equal opportunity throughout the design/construction process. The results are as given in Table 4.12.

Table 4.12: Team Integration/Work Relationships (Descriptive Statistics)

Statements

	<u>N</u>	<u>Mean Deviation</u>	
There is common support and trust amongst all members of the team	162	4.06	0.98 162
Focus is placed on goals and objectives		3.83	1.15
Relationship and contribution to the team is fair and respected	162	3.81	0.93 162
Focus is placed on shared goals and ideas		3.38	1.15
There are fewer or no conflicts among the project team	162	3.38	1.13 162
There is no fragmentation of the project team		3.36	1.24
There is true commitment, cooperation and understanding of each other's needs	162	3.25	1.17
Every member of the team operates with a 'no blame' culture		3.13	1.12 162
Achievements are shared throughout the team		3.13	1.21
There is equal opportunity throughout the design/construction process			
<u>Overall approval (satisfaction)</u>	<u>162</u>	<u>3.10</u>	<u>1.18</u>
Source: Field data, 2014			
		3.44	0.69

4.4.11 Conflict/Conflict Resolution

Std.

The results obtained for in the area of conflict/conflict resolution creates the impression that there is more to be desired in dealing with conflicts. The approval indicator obtained for the ways in which conflicts are dealt with is 3.27 on a maximum scale of 5. Specifically, the approval indexes ranged from 2.68 to 3.94. The view that diversity of knowledge, skill and experience are not sources of conflict, that protracted conflicts do not persist in the team, and that strongly held personal beliefs and principles do not result in conflict all attracted a moderate approval whiles the view that individuals accept resolved personal conflicts in good faith almost barely attracted a moderate approval and becoming the view most strongly disagreed on. The view that controversy and criticisms can be seen as a positive contributor to the creative decision process presented the dimension that respondents most strongly agreed on. Details of these findings are presented in Table 4.13.

Table 4.13: Conflict/Conflict Resolution (Descriptive Statistics)

<u>Statements</u>	<u>N</u>	<u>Mean</u>	<u>Std. Deviation</u>
Controversy and criticisms can be seen as positive contributor to the creative decision process	162	3.94	1.04
Strongly held personal beliefs and principles results in conflict	162	3.32	1.46
Protracted conflicts do not persist in the team	162	3.23	1.25
Diversity of knowledge, skills and experience are not sources of conflicts	162	3.17	1.38
<u>Individuals accept resolved personal conflicts in good faith</u>	<u>162</u>	<u>2.68</u>	<u>1.28</u>
<u>Overall approval (satisfaction)</u>		<u>3.27</u>	<u>0.88</u>

Source: Field data, 2014

Scaling together all the constructs looks at, thus far – communication, team goals and objectives, quality/specification, competence, payment, project schedule, response to complaints, health and safety/risk/environment, procurement processes, team integration/work relationships, and conflict/conflict resolution – it can be realized that there had been moderate approval with propriety as regards team goals and objectives, payment, project schedule, team integration/work relationships, and conflict/conflict resolution (with Mean approximately 3.00). Nonetheless, conflict/conflict resolution attracted an all-time low approval rate indicating there is relatively small realistic achievement by the project team in that regard. This is followed by payments. Competence emerged as the construct which earned the highest regard. This is followed by communication, quality/specification, and procurement processes which earned the approval of the respondents. The respondents agreed most similarly with communication than any of the other constructs (indicated by the smallest standard deviation of 0.60).

They also had most divergent agreement levels in terms of conflict/conflict resolution (shown by the largest standard deviation of 0.88). The results are as presented in Table

4.14.

Table 4.14: Relative Approval Rate of Constructs measured (Descriptive Statistics)

Constructs	Mean on a maximum scale of 5	Std. Deviation
Competence	3.84	0.62
Communication	3.79	0.60
Quality/specification	3.70	0.63
Procurement processes	3.69	0.69
Health and safety/risk/environment	3.59	0.83
Response to complaints	3.58	0.65
Team integration/work relationships	3.44	0.69
Team goals and objectives	3.42	0.70
Payment schedule	3.33	0.76
Payment	3.28	1.24
<u>Conflict/conflict resolution</u>	<u>3.27</u>	<u>0.88</u>

Source: Field data, 2014

4.5 Level of Satisfaction with past and current Projects

This part of the study attempts to ascertain the respondents' level of satisfaction with past and current projects they have been involved in. Satisfaction have been measured on a 5point Likert scale wherein 5 represents „Excellent“, 4 – Very Good, 3 – Good, 2 – Poor, and 1 – Very Poor satisfaction levels.

The satisfaction levels obtained ranged from 1 (very poor) to 5 (excellent). A satisfaction indicator of 3.43 on a maximum scale of 5 was obtained. This implies that satisfaction with past and present projects has been, generally, „good“ among the respondents. The detailed results are presented in Table 4.15.

Table 4.15: Respondents' Satisfaction with past and current Projects

<u>Satisfaction with projects</u>	<u>Scale 1-5</u>
Minimum	1.00
Maximum	5.00

Mean on scale 5	3.43
Std. Deviation	0.87
<u>N</u>	<u>162</u>

Source: Field data, 2014

4.6 Factors predicting or determining Satisfaction with Project

It is the case in this study to assess the causal relationship between construction project management practices and satisfaction of project participants. In Table 4.16, Pearson's correlation coefficients have been given with significant relationships flagged where applicable. The significant correlation coefficient reported between project schedule and project participants' satisfaction ($r = 0.520$) ($p < 0.05$) indicates a positive correlation between the two variables. This implies that participants' satisfaction increased as construction project schedules improved. Remarkably, proper project schedule and project participants' satisfaction are linked. Additionally, the table also gives indication that most of the practices in different aspects of construction project management influence the outcomes in other aspects of the construction project. For example, there are significant positive correlations between the communication and team goals and objectives, quality specification, and competence ($p < 0.05$); and many such relationships as is shown in detail in Table 4.16, suggesting that an improvement in one of them likewise effects an improvement in the other. Meanwhile, propriety of project schedule significantly influences project participants' satisfaction. In other words, communication, team goals and objectives, quality specification, competence, payment, response to complaints, health and safety/risk/environment, procurement process, team integration/work relationships, and conflict/conflict resolution did not significantly influence construction project participants' satisfaction, suggesting that, other than these constructs, there were explanatory factors that significantly influenced project participants' satisfaction.

Table 4.16: Correlation coefficients for eleven variables in the study

Items	1	2	3	4	5	6	7	8	9	10
Stf										
1	0.368									
		0.289								
2	0.019 *									
		0.410	0.455							
3	0.156 *	*								
		0.593	0.278	0.596						
4	0.165 *	*	*							
		0.309								
5	0.026 *	0.085	0.344	0.360						
6	0.520*	0.506	0.155	0.340	0.134	0.118				
7	0.278	0.190	0.445	0.435*	0.219	0.273	0.481*			
8	0.042	0.247	0.082	0.437	0.429	0.438*	0.462	0.396		
9	0.454	0.327	0.456*	0.357	0.348	0.406	0.375	0.381	0.21	
10	0.405	0.349*	0.329	0.325	0.269	0.203	0.480	0.404	0.423	0.515
11	0.356	0.190	0.443	0.355*	0.500	0.599*	0.359	0.445	0.287	0.275

Notes: * Significant at $p < 0.05$

1–Communication, 2–Team goals & objectives, 3–Quality/specification, 4–Competence, 5–Payment, 6–Project schedule, 7–Response to complaints, 8–Health and safety/risk/environment, 9–Procurement process, 10–Team integration/work relationships, 11–Conflict/conflict resolution.

Source: Field data, 2014

To determine the predictors of project participants' satisfaction, a multiple regression analysis has been conducted, the motive being, to find out whether propriety concerning communication, team goals and objectives, quality/specification, competence, payment, project schedule, response to complaints, health and safety/risk/environment, procurement processes, team integration/work relationships, and conflict/conflict resolution determine project participants' satisfaction.

From Table 4.17, the regression results shows a significant predictive relationship the project management constructs used in the study and project participants' satisfaction levels ($F = 13.817$, $p < 0.05$). However, from the Adjusted R^2 value (0.154), 15.4% of the variance in participants' satisfaction can be determined by the constructs used.

Comparing with all the constructs used, procurement process emerged the biggest significant element of construction project that predicts the level of satisfaction of project participants ($\beta=0.271$). This is followed by competence ($\beta=0.214$) and payment ($\beta=0.019$) respectively. Thus, competence and payment but, more importantly, procurement process significantly predicts project participants' satisfaction ($p<0.05$). The better they are, the higher the project participants' satisfaction will be. Therefore, in determining project participants' satisfaction, except competence, payment and procurement processes, the other constructs as used in this study can be ignored in the satisfaction model.

Table 4.17: Predictors of Project Participants' Satisfaction

Model	Un-standardized coefficients <i>B</i>	Std. error	Standardized coefficients β	<i>t</i>	Sig. <i>p</i>
Constant	4.681	0.929		5.04	0.00
Communication	0.054	0.238	0.035	0.210	0.835
Team goals/objectives	0.042	0.196	0.037	0.220	0.826
Quality/specification	0.119	0.257	0.087	0.462	0.646
Competence	0.202	0.238	0.214	1.261	0.040*
Payment	0.158	0.165	0.019	0.957	0.012*
Project schedule	0.125	0.194	0.121	0.644	0.522
Response to complaints	-0.099	0.224	-0.056	-0.986	0.328
Health&safety/risk/environment	0.136	0.194	0.213	0.700	0.487
Procurement processes	0.341	0.203	0.271	0.172	0.030*
Team integration/work relationships	0.187	0.209	0.153	0.896	0.374
Conflict/conflict resolution	-0.212	0.174	-0.117	-1.279	0.206
F	13.815*				
R ²	0.166				
Adj. R ²	0.154				

Note: * Significant at $p<0.05$

However, a model involving the constructs but not neglecting procurement process, competence and payment, can be developed as follows:

Let Y = Participants' satisfaction, X_1 = Communication, X_2 team goals and objectives, X_3 = quality specification, X_4 = competence, X_5 = payment, X_6 = project schedule, X_7 = response to complaints, X_8 = Health and safety/risk/environment, X_9 = procurement process, X_{10} = team integration/work relationships, and X_{11} = conflict/conflict resolution. Then,

$$Y = 4.681 + 0.054X_1 + 0.042X_2 + 0.119X_3 + 0.119X_4 + 0.202X_5 + 0.158X_6 - 0.099X_7 + 0.136X_8 + 0.341X_9 + 0.187X_{10} - 0.212X_{11}$$

The equation above can be used as a model to predict project participants' satisfaction.

The results determining the satisfaction of the participants involved in the study was pooled together so that the findings represent satisfaction with construction project delivery based on the views of different categories of people or professionals who worked together to contribute to the overall success of the construction project. This approach to satisfaction with project delivery proves to be more accurate in terms of the overall construction project. It is discernible that any given construction project involves several stages requiring different professional involvements. As a result, different professionals are engaged in the project. To assess the satisfaction with project delivery therefore there is the need to pool together the views of the various professionals, especially those who are key to the execution of the project. As has been done in this analysis, the data from various professionals or stakeholders in construction project management are pooled together to give the overall satisfaction with project delivery. The essence of the stakeholders identified in this study, namely, civil engineers, project managers, architects, client organisations, contractors, and quantity surveyors cannot be downplayed in the construction projects. The level of their satisfaction collectively provides a strong indication of what becomes of the project.

4.7 Summary of Chapter

This chapter has provided the results from data obtained for the study. The factors relevant for completion of construction projects were identified and ranked according to the respondents' view as to the relative satisfaction for each of the parameters. Competence was most highly exhibited in construction projects in the respondents' view. This was followed by communication, quality specification, and procurement processes among others. Performance in relation to payments in construction projects was low with conflict/conflict resolution being the lowest. Satisfaction with projects (past or current) was seen to be moderate. Remarkably, proper project schedule had a positive correlation with project participants' satisfaction. Other factor in construction project performance, such as communication and team goals, quality specifications, and competence were positively correlated. Results have also proved that a significant predictive relationship exists between the performance parameters identified and the project participants' satisfaction with project. Competence and payment, but more importantly, procurement process significantly predicts project participants' satisfaction. Therefore, in determining project participants' satisfaction, the better these immediate factors are, the higher the project participants satisfaction will be.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents conclusions on the study and all issues that had been found and discussed in preceding chapters. The research begun by given an overview of what project participant satisfaction in the research was about, the aims and objectives were set out at the start of the research. It then offers the benefits to be derived from the study and the contribution of the research to academia and industry. Recommendation for further research was also presented.

5.2 Summary of Findings

The dissertation concentrated on factors for measuring project participants' satisfaction. The introduction to the research was dealt with in chapter one. The chapter two delved into existing literature to review works of previous researchers on the subject of the study. In chapter three, appropriate methodological framework pertinent to the research was selected and the reasons for their use were presented. The research process was concentrated on one main survey instrument which was the survey questionnaires, it is credible to indicate that prior to the design of the questionnaires an informal and offrecord interviews were undertaken by the researcher with industry experts to give practical insight and focus to the design of the questions needed to be posed to help achieve the stated objectives. Chapter four presented in detail discussions and analysis of the research results. In the final and concluding chapter, Chapter Five, wrapped up the whole work and issues tackled in the research. Recommendations were also presented in this section.

This research has undertaken a study of factors related to satisfaction of project participants in construction delivery. This has led to the development of a predictive model to predict project participants' satisfaction in the project delivery process. The key findings are summarized according to themes reflecting the objectives of the study as stated in the introductory chapter.

5.2.1 The Attributes for Construction Project Delivery

The study identified fifteen Satisfaction factors which would affect the execution or delivery of any construction project. The results obtained in the study revealed that, eleven of the satisfaction factors, namely, health and safety/risk/environmental issues, team integration/work relationships, payment, competence, response to complaints, project/schedule, conflict/conflict resolution, team goals and objectives, procurement process, communication, and quality specification issues were reliable in showing performance in construction projects. Relatively, the major performance attribute emerged as competence. Results from the study showed payment and conflict/conflict resolution were critical areas of performance that left much to be desired.

5.2.2 Characteristic Factors that determine Project Participants' Satisfaction

This study revealed that certain characteristic factors which were associated with project participants' satisfaction. Remarkably, proper project schedule had a positive correlation with project participants' satisfaction. Some factors in construction project performance, such as communication and team goals, quality specifications, and competence were positively correlated. The study also proved that a significant predictive relationship exists between the performance attributes identified and the project participants' satisfaction with project. This implies that performance in project determines the satisfaction of project participants. Competence and payment issues in the construction projects, but more importantly, procurement process significantly predicts project participants' satisfaction. Therefore, in determining project participants' satisfaction of any construction project this study predicts that procurement processes followed by competence and payment issues should be well streamlined. How better these factors are, the higher the project participants satisfaction will be.

5.3 Conclusion

This study concludes that in the perception of the respondents, most of the attributes under investigation have some level of importance in achieving project participant satisfaction; albeit, there were different degrees of importance attached to the different criteria of satisfaction. The three most important attributes for predicting project participants' satisfaction are competence, payment, and procurement processes.

The claim in this study is that, performance issues relating to construction projects are critical factors in project participants' view. There is no doubt that they determine the satisfaction level of the project participants about the construction project. Where effort is made to streamline performance issues it would have some benefits: First, it would significantly lead to the satisfaction of project participants. Second, project participants due to their satisfaction would be boosted to conduct subsequent construction projects with high integrity thereby improving the construction industry.

Competence, payment, and procurement process significantly determine the satisfaction of project participants and therefore need to be factored into any construction project team for quality execution and delivery of construction projects.

5.3 Recommendations

Based on the findings and discussions of the research, it is recommended that more emphases must be given to improving the technical and trade related capabilities of construction practitioners within the industry, specifically within the project environment. Construction professionals including tradesmen must be encouraged to train to acquire certification from their professional Association to improve their skills and competences on the job. Organizations must endeavor to maintain a consistent training and skill development regime to their staff to ensure that their workers have current aptitudes and are on-top of their job, in order to promote mutual satisfaction of those who work together on

projects. Academia should do more research into unraveling the underpinning theories of competency and competency based training and development of construction workers. Additionally, it is envisaged that the team the environment encourage people to apply themselves effectively than when they work as individuals. The spirit of competition that subtly exists among people in teams is anticipated to help sharpen the skill of people and build on their competencies, in this vein participant in teams must be seen to be encouraged so that their abilities are appropriately unleashed to advance the objectives of the team they work with.

Further, because respondents indicated their satisfaction on projects where there is ability to pay for services rendered, it would be worthwhile that bankers of would be employers should be contacted who would vouch for their financial credibility. This would go a long way to assure service providers that their efforts would adequately be rewarded after completion of their assignments.

During the course of study, it was observed that individuals operate „false“ outward behavioral manifestation, but later on over familiarization in the projects reveals deepseated attitudes which negatively impact smooth project integration. Therefore, it will be important to investigate into how over familiarization and beliefs among project participants can affect project team satisfaction. The following recommendations arise as a result of the findings from this study:

First and foremost, competence, payment and procurement processes in every construction project should be adequately addressed with the surety that there would no bottlenecks or misunderstandings among construction project participants.

Second, contractors engaged in projects should endeavor to maintain a high level of safety consciousness among their workers and organize project sites in the most environmentally friendly manner so that there will be fewer accidents at the project site. Sites must be

planned to maximize efficiency of operations and to promote worker productivity, also they must reduce work time and eliminate ineffective cost so that so that the client can benefit. Failure of participants especially the contractor to properly organize the site can result in operational inefficiencies and does not help the image of the contractor.

Third, many of the construction sites that are entangled in problems are as a result of poor managerial factors than any other factor in the project. Site managers can make major progress in time and cost savings without having to do extra work by adopting a good site layout planning. The need for participants to strive to achieve project objectives cannot be overemphasized, this is because participants are known to focus on achieving their own objectives, without due regard to the objectives of others, individual objective at the expense of the overall goal negate collective effort and this scenario does not auger well for the satisfaction of project participants. This parochial benefit will be at the expense of the success of the overall project and also at the expense of peaceful work relationships which can cause the project. All participants should try and improve performance in order to attain individual and overall project goals.

Fourth, information should be shared freely without restriction to any professional unit.

This should be done bearing in mind that specific project goals lead to higher team satisfaction.

Efforts much be made to ensure that the team understand team goals and objectives

Fifth, project costs should continuously be monitored with good approaches in handling team conflict, consistently building an honest, friendly and good atmosphere for project participants.

Suggestion for further studies

This research piece had inherent drawback in some of it strategies, approaches and scope.

This limitation provides grounds for subsequent research investigation into the subject. This research experienced constraints in the following points:

The probable impact of sampling process that is simple random sampling might be froth with some degree of error in the data gathered and the subsequent analysis undertaken.

The relatively small sample size of ninety (162) respondents consisting of members within the construction project team could have been better with a larger number of participants, most specifically seeing Pearson's correlation analysis is optimally strong with sample size of 250 and above. This sample size might not precisely predict the nature and character of project team satisfaction in the project delivery process. That notwithstanding, this would not explain away the conclusions arrived at and the evidence that initial tests in relation to the sample drawn were all adequate.

REFERENCE

Ahadzie, D. K. (2007) A Model for Predicting the Performance of Project Managers in Mass House Building Projects in Ghana. PhD Thesis, University of Wolverhampton, United Kingdom

Alvarado, A. M. O., (2011) Unified Framework For Construction Project Integration and its Potential Association with Project Performance. PhD Thesis, Georgia Institute of Technology, USA

Baiden, B.K. (2006) Framework for the Integration of the Project Delivery Team. PhD Thesis, Loughborough University, United Kingdom.

Baiden, B.K. and Price A. D.F. (2009) The effect of integration on project delivery team effectiveness .*International Journal of Project Management* 29 (2011) 129-136

Barrett P.(2000) System and Relationship for Construction Quality. *International Journal of Quality and Reliability Management*, Vol. 17 Iss: 4pp. 377 - 392

Basadur, M. and Head, M. (2001).“Team Performance and Satisfaction: A Link to Cognitive Style Within a Process Framework”, *Journal of Creative Behavior*, Vol. 35(4), pp.227-248

Bassioni H. A., Price A. D. F. and Hassan T. M. (2005) Building a conceptual framework for measuring business performance in construction: an empirical evaluation *Construction Management and Economics* Vol.23, pp. 495–507

Bell, J. (1996), *Doing Your Research Project: A Guide for First Time Researchers In Education and Social Sciences*, Open University Press, Buckingham

Bender W. J. and Septelka D. (2010) Team Building in the Construction industry.*Association of Researchers in Construction Management*.

Blyde,D. J. and Robinson L. (2005). Client versus contractor perspective on project success criteria *International Journal of Project Management* 23, pp.622–629

Bresnen M. and Marshall N. (1999)Building partnerships: case studies of client– contractor collaboration in the UK construction industry *Construction Management and Economics* (2000) Vol. 18, pp. 819–832

Carlson A. (2011)The connection between communication satisfaction and team success in college athletic teams. MSc. Thesis, Central Missouri: University of Central Missouri.

Cengiz E.(2010) Measuring customer satisfaction: must or not? *Journal of Naval Science and Engineering*2010, Vol. 6, No.2, pp. 76-8876

Cengiz E.(2010)Measuring Customer Satisfaction Must or Must Not? *Journal of Naval Science and Engineering*, Vol. 6 , No.2, pp. 76-88

Chen, W. T., Liao S. L., Lu C.S. and Mortis L. Evaluating satisfaction with professional project management services for school construction: A case study of primary school projects (2009)*International Journal of Project Management*, 28 (6), pp.296–310 Cheng J. The impact of strategic decisions on construction client satisfaction: an assessment framework. PhD thesis, Wolverhampton: University of Wolverhampton

De Dreu C. K. W. and Weingart L. R. (2003) Task Versus Relationship Conflict, Team Performance ,and Team Member Satisfaction: A Meta-Analysis *Journal of Applied Psychology*, Vol. 88, No. 4, pp. 741–749

Dimitriades Z. S. (2006) Customer Satisfaction, loyalty and Commitment in in Service Organizations some evidence from Greece. *Management Research News*, Vol. 29 Iss:12 pp.782 - 800

Dulaimi M. F.(2005)The challenge of customer orientation in the construction industry. *Construction Innovation* 2005; pp5: 3–12

Dulaimi M.F. (2004) The Challenge of Customer Orientation in the Construction industry. *Construction Innovation*,Iss5: pp.3–12

EngstromS., SardénY. And StehnL.(2009) Towards Improving Client-Contractor Communication in industrialized Building. *Association of Researches in Construction Management*, pp. 21-30.

Gambatese, J., and Hinze, J. (1998) Addressing construction worker safety in the design phase: Designing for construction worker safety. *Automation in Construction*, **8**(6), pp.643-649

Gunning, J G (2000) Models of customer satisfaction and service quality as research instruments in construction management. *Association of Researchers in Construction Management*,Vol.1,21-30

Hair J. F., Black B. and Babin B., (2005).Multivariate Data Analysis. Prentice Hall, New Jersey.

Hamlyn-Harris J. H., Hurst B. J., von Baggo K. and Bayley A. J. (2006) Predictors of Team Work Satisfaction.*Journal of Information Technology Education* Vol.5

Hassan S.M., Al-Tmeemy M., Abdelm-Rahman H. and Harun Z. (2010) Future Criteria for Success of Building Projects in Malaysia. *International Journal of Project Management* Vol.29 pp 333-348.

Health and Safety Executives,(2007) Managing Heath and Safety in Construction, Construction (Design and Management) regulation 2007 Approved Code of Practice, available [On-line] www.hse.gov.UK

Hoezen M., Reymen I. and G. Dewulf (2009) Problems of Communication in Construction. University of Twente, The Netherlands.

Humbyrd M. D. and Gable R. K (2010)The relationship of personality traits to satisfaction with the team: a study of interdisciplinary teacher teams in Rhode Island Middle Schools. *Northeastern Educational Research Association conference proceedings*.

Hyde M., Jappinen P., Theorell T. and Oxenstierna G. (2006) Workplace Conflict Resolution and health of Employees in the Swedish and Finnish Units of an Industrial Company.

Idrus A., Sodangi M. and M. H. Husin(2011) Prioritizing Project Performance Criteria within Client Perspective. *Research Journal of Applied Sciences, Engineering and Technology* 3(10) ISSN: 2040-7467: pp.1142-1151.

Idrus A.B. and Sodangi M. (2006) Framework for evaluating quality performance of contractors in Nigeria. *International Journal of Civil & Environmental Engineering* Vol: 10 No: 01

Jones S. (1992) *The Human Factor: Maximising Team Efficiency Through Collaborative Leadership* Kogan Page, London

Kadefors A., Gerle C. and Nyberg L. (2010) Trust and Mistrust in Temporary Client-Contractor Relationship

Karna S. (2009) Concepts and attributes of customer satisfaction in construction. PhD Thesis, Helsinki: Helsinki University of Technology

Karna S. (2004) Analysing customer satisfaction and quality in construction– the case of public and private customers. *Nordic Journal of Surveying and Real Estate Research, Special Series*, (2004) Vol. 2

Kristensen K., Kanji G. K. and J. J. Dahlgaard (1992) On Measurement of Customer Satisfaction,

Laura W. R. and L. M. Takahashi (2012) Exploring the Influence of Participation on Larson, M. S. (1977) *The Rise of Professional: A Sociological Analysis*. Berkeley, CA: University of California Press.

Lovaglio P. G. (2004) Customer Satisfaction in a Reduced Rank Regression Framework. *Total Quality Management Magazine* Vol. 16 Iss: 1 pp. 33 – 44

Love, P.E.D., Skitmore, M., and Earl, G. (1998) Selecting a Suitable Procurement Method for a Building projects. *Construction Management and Economics*, 16(2), pp. 221-233

Maloney W. F. (2002) Construction Product/Service and Customer Satisfaction. *Journal of construction engineering and management* pp 523

McMillan, J. H., and Schumacher, S. (1997). *Research in education: a conceptual introduction*. Longman, 684

Moser, K., and Kalton, F. (1976). *Relevance of assessing sample size before proceeding with data analysis*.

Morgan N. A., Anderson E. W. and V Mittal (2005) Understanding Firms Customers' Satisfaction Information. Usage *Journal of Marketing*, Vol. 69, No. 3, pp. 131-151

Nzekwe-Excel, C., (2010) Development of an integrated framework for satisfaction assessment of construction project teams". PhD Thesis, Wolverhampton: University of Wolverhampton

- Nzekwe-Excel C., Nwagboso C., Proverbs D. G. and Georgakis P. (2008) An approach for evaluating the satisfaction of a construction project team. *Association of Researchers in Construction Management* pp.73-82.
- Ong E. M.S. (2008) Trust, Commitment, Satisfaction and learning in construction project teams. PhD Thesis, Sydney: The University of New South Wales
- Oyedele L.O. and Tham, K.W. (2007). Clients' Assessment of Architects' Performance in Building Delivery Process: Evidence from Nigeria. *Building and Environment*, 42(5), pp.2090-2099
- Pallant J. (2005) "SPSS Survival Manual-A Step by Step Guide to Data Analysis Using SPSS for Windows (Version 12)", Allen and Unwin, Australia
- Payne A., Ballantyne D. and Christopher M. (2005) A Stakeholder Approach to Relationship Marketing Strategy: The Development and Use of the „Six Markets“ Model. *European Journal of Marketing*, Vol. 39 Iss:7 pp. 855-871
- Pineda R. C. and Lerner L. D. (2006) Goal attainment, satisfaction and learning from teamwork. *Team Performance Management* Vol. 12 No. 5/6, pp. 182-191
- Pinto J. K. and Slevin D. P. and English B. (2009) Trust in projects: An empirical assessment of owner/contractor relationships *International Journal of Project Management*, Vol. 27 pp.638–648
- Programme Satisfaction: Lessons from the Ahmedabad Slum Networking Project. *Urban Studies Journal Foundation*.
- Rahim A., Bonoma T. V. (1979) Managing organization conflicts: A model for diagnosis and intervention *Psychological Reports* 44, 1323- 44
- Rowland D. C. (2008) Optimizing the project team's contribution to business objectives. MSc. Thesis, South Carolina: Clemson University
- McClements S., H. Odeyinka and Eadie R. (2012) Pre-Selection of Construction Consultants based on Attributes of Trust. *Association of Researchers in Construction Management* pp.717-726
- Satisfaction for main participants of construction project coalitions *Association of Researchers in Construction Management*.
- Scholtes, P. R., Joiner, B. L., and Streibel (1996) *Team Handbook*. 2nd Ed; Oriel Incorporated Pubs.
- Shirazi A. and Hampson K. D. (1999) Towards more complete satisfaction of construction clients. *In 2nd International Conference on Construction Process Reengineering*, 11-13 July 1999, Sydney.

Soetanto R., Proverbs D. G. and Holt G. D. (2012) Achieving Quality Construction Projects based on Harmonious Working Relationships - Clients' and Architects' perceptions of Contractor Performance. *International Journal of Quality & Reliability Management*. Emerald Vol. 18 Iss: 5 pp. 528 - 548

Soetanto R., Proverbs D. G. and Cooper P. (1999) A Conceptual Model of Performance and Sydney.

Staw B. and Cumming C. (1979) Research in Organization Behaviour. Greenwich, CT; JAI Press. Vol 2 P. 265-339

Takim, R., Alam S., and Adnan H. (2008) Analysis of Effectiveness Measures of Construction Project Success in Malaysia. *Asian social science*, Vol. 4 No. 7

Tan E. (2009) How do Construction Engineers Interact with their Clients? PhD Thesis, The University of Western Australia, Perth, Western Australia. *Total Quality Management Magazine*, Vol. 3, No. 2

Van der Vegt G., Emans B. and Evert Van de Vliert (2001) Patterns of Interdependence in Teams: A Two-Level Investigation of Relationships with Job and Team Satisfaction. *Personnel Psychology* Vol. 24

Wang X. and Huang J. (2006) The relationships between key stakeholders project performance and project success: Perceptions of Chinese construction supervising engineers. *International Journal of Project Management*, Vol. 24, pp. 253–260

Yang J. B. and Peng S.C. (2006) Development of a customer satisfaction evaluation model for construction project management. *Building and Environment* 43 (2008) pp. 458–468

Yasamis F., Arditi D. and Mohammadi J. (2001) Assessing Contractor Quality Performance. *Construction Management and Economics* Vol. 20, pp. 211-223

Yong Y. C. (2011) Clients, Consultants, and Contractors' Perception of Critical Success Factors for Construction Projects in Malaysia. *Association of Researchers in Construction Management*.

Vanderstoep, S. W., and Johnston, D. D. (2009) Research Methods for Everyday Life: Blending Quantitative and Qualitative Approaches. *Jossey-Bass, San Francisco CA*, 351

APPENDIX A: QUESTIONNAIRE SURVEY INSTRUMENT

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

**COLLEGE OF ARCHITECTURE AND PLANNING DEPARTMENT OF BUILDING
TECHNOLOGY**

**INVITATION TO PARTICIPATE IN A STUDY
ON THE TOPIC:**

“PROJECT PARTICIPANTS’ SATISFACTION ON CONSTRUCTION DELIVERY”

You are kindly invited to participate in an ongoing research, which seek to explore into the factors for measuring project participants’ and client satisfaction on construction delivery

This research questionnaire seeks to solicit your valued opinion, to aid the study into the factors for measuring project Participants’ satisfaction in the Construction sector.

On behalf of the Building Technology Department of the Kwame Nkrumah University of Science and Technology, I wish to thank you for your time and contribution to this research.

Years of experience in the construction sector

.....

Business Address (Optional)

.....

Tel. E-mail

.....

Please kindly tick among the five options [5 **strongly agree**, 4 **agree**, 3 **somewhat agree**, 2 **disagree**, 1 **strongly disagree**] the one that best describes or suits your circumstance

APPENDIX A1: QUESTIONNAIRE

Please tick the one that best describes you:

A)

Architect ☐ Client ☐ Project manager ☐ Civil Engineer ☐ QS ☐

Main Contractor

Years of Experience ☐

Please tick the following sections considering that:

[5 strongly agree, 4 agree, 3 somewhat agree, 2 disagree, 1 strongly disagree]

5 4 3 2 1

Are you satisfied with past and current project you have ever been on (Stf)? ☐ ☐ ☐ ☐ ☐

Preamble

To elicit your valued opinion, it is assumed there is an hypothetical construction project being undertaken by construction professionals engaged by a client, the project commences from the design through construction phases to handover.

B)

1. Communication

	5	4	3	2	1
Information is shared freely without restriction to any profession/unit Parties	☐	☐	☐	☐	☐
demonstrate an open and honest communication flow e-mail/paperless	☐	☐	☐	☐	☐
communication is ineffective,	☐	☐	☐	☐	☐
Meetings are not called at short notices	☐	☐	☐	☐	☐
Open communication may build trust	☐	☐	☐	☐	☐
Frequent meetings does not retard productivity	☐	☐	☐	☐	☐
Communication flow is honest, consistent & friendly	☐	☐	☐	☐	☐
Formal channels of communication creates bureaucracy	☐	☐	☐	☐	☐
Medium of communication must be same for parties	☐	☐	☐	☐	☐
Any party can initiate the information process	☐	☐	☐	☐	☐

2. Team goals & objectives

	5	4	3	2	1
understand team's goals and objectives.	☐	☐	☐	☐	☐
Specific goals	☐	☐	☐	☐	☐
leads to higher team commitment.	☐	☐	☐	☐	☐
Higher participation in goals setting leads to commitment	☐	☐	☐	☐	☐
Our Team is committed to achieve team's goals and objectives.	☐	☐	☐	☐	☐
Task objectives should align to project objectives	☐	☐	☐	☐	☐
Everyone on the project team knows and understands the project goals	☐	☐	☐	☐	☐
Everyone strives to meet project goals at all times.	☐	☐	☐	☐	☐

3. Quality/Specification

	5	4	3	2	1
Material and components are according to specification	☐	☐	☐	☐	☐
Permits flexible changes or modifications to project designs	☐	☐	☐	☐	☐
Fewer defects in delivery & future processes	☐	☐	☐	☐	☐
Ensures that there is fewer reworks & defects	☐	☐	☐	☐	☐
Project schedules are detailed and easy to understand	☐	☐	☐	☐	☐
The satisfaction the end-user experiences with the facility's aesthetics is good	☐	☐	☐	☐	☐
Features that supplement functions of the product/facility are good	☐	☐	☐	☐	☐

4. Competence

	5	4	3	2	1
Project management/contractor groups has a track record of experience	☐	☐	☐	☐	☐
Team members have the necessary expertise and skills to perform the tasks	☐	☐	☐	☐	☐
Opportunity to offer alternatives and innovation	☐	☐	☐	☐	☐
Continuous improvement of processes and results	☐	☐	☐	☐	☐
Ensures strategies for managing unforeseen risks are in place	☐	☐	☐	☐	☐
Better decision-making strategies due to open & vast ideas	☐	☐	☐	☐	☐
Improved transition into the different project stages	☐	☐	☐	☐	☐
Fewer defects in delivery & future processes	☐	☐	☐	☐	☐
Consistency in techniques and procedures	☐	☐	☐	☐	☐

5. Payment	5 4 3 2 1
Remuneration is commensurate with output	☐ ☐ ☐ ☐ ☐
Payment is quick and without delay	☐ ☐ ☐ ☐ ☐
6. Project schedule	5 4 3 2 1
Project schedules are detailed & easy to understand	☐ ☐ ☐ ☐ ☐
Project is completed on time	☐ ☐ ☐ ☐ ☐
Improved transition into the different project stages or phases	☐ ☐ ☐ ☐ ☐
Party responds quickly to meet my deadlines	☐ ☐ ☐ ☐ ☐
Reports and documentation were prepared within the time given. Unforeseen physical and weather conditions have been considered in project schedule.	☐ ☐ ☐ ☐ ☐
7. Response to complaints	5 4 3 2 1
Response to complaints, changes, or clarifications is quick & productive	☐ ☐ ☐ ☐ ☐
There is better management of complaint& response system	☐ ☐ ☐ ☐ ☐
Every person in the organization must be client friendly	☐ ☐ ☐ ☐ ☐
Better management of clients	☐ ☐ ☐ ☐ ☐
Interaction are open & friendly	☐ ☐ ☐ ☐ ☐
Party demonstrate ability to listen	☐ ☐ ☐ ☐ ☐
Party Chooses the right mode to communicate response	☐ ☐ ☐ ☐ ☐
8. Health and Safety/Risk/Environment	5 4 3 2 1
Health & safety procedures are with no incidents	☐ ☐ ☐ ☐ ☐
Plans for managing unforeseen projects risks are in place	☐ ☐ ☐ ☐ ☐
Safer working conditions	☐ ☐ ☐ ☐ ☐
Less generation of wastes	☐ ☐ ☐ ☐ ☐
Site is orderly and neat	☐ ☐ ☐ ☐ ☐
Safety is clearly a priority in project.	☐ ☐ ☐ ☐ ☐
Exceptional efforts were made to establish effective safety procedures.	☐ ☐ ☐ ☐ ☐
Safety record keeping and reporting are well-managed and documented	☐ ☐ ☐ ☐ ☐

Project safety inspections are conducted throughout the project.

☐ ☐ ☐ ☐ ☐

Project safety inspections are well managed.

☐ ☐ ☐ ☐ ☐
☐ ☐ ☐ ☐ ☐

9. Procurement processes

Smart and easy procurement route is followed

5 4 3 2 1
☐ ☐ ☐ ☐ ☐

Tender evaluation is not based solely on cost but quality

☐ ☐ ☐ ☐ ☐

Open competitive tendering is favoured than the others

☐ ☐ ☐ ☐ ☐

Sufficient time is allowed for tender

☐ ☐ ☐ ☐ ☐

There exists early involvement of contractor

☐ ☐ ☐ ☐ ☐

Each stage of the project process is completed on time

☐ ☐ ☐ ☐ ☐

There exists tender assessment of quality, not just price

☐ ☐ ☐ ☐ ☐

10. Project/Work variations

5 4 3 2

1

Engineer ensures that the cost of changes are fairly priced

☐ ☐ ☐ ☐ ☐

Makes sure the cost of variations are introduced as early as possible

☐ ☐ ☐ ☐ ☐

11. Estimates

5 4 3 2 1

There is negligible or no disparity between actuals & estimate

☐ ☐ ☐ ☐ ☐

Estimates must be known by all parties

☐ ☐ ☐ ☐ ☐

12. Team integration/work relationships

5 4 3 2 1

There is common support and trust amongst all members of the team

☐ ☐ ☐ ☐ ☐

Focus is placed on my goals and objectives

☐ ☐ ☐ ☐ ☐

My relationship and contribution to the team is fair and respected

☐ ☐ ☐ ☐ ☐

There is equal opportunity throughout the design/construction process

☐ ☐ ☐ ☐ ☐

Every member of the team operates with a 'no blame' culture

☐ ☐ ☐ ☐ ☐

Achievements are shared throughout the team

☐ ☐ ☐ ☐ ☐

There is true commitment, cooperation & understanding of each others' needs

☐ ☐ ☐ ☐ ☐

Focus is placed on shared goals and ideas

☐ ☐ ☐ ☐ ☐

Fewer or no conflicts among the project team

☐ ☐ ☐ ☐ ☐

There is no fragmentation of the project team

☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

13. Cost of project

There are no cost over runs in the projects

5	4	3	2	1
☐	☐	☐	☐	☐

Contingency is accurate

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Engineer, architect & contractor foresee possible future cost

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

implication Cost is effective if variation is compared relative to the budget, and net present value.

Project cost continuously monitored

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Cost issues must be discussed dispassionately

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Cost performance is measured using the indicators of unit cost, percentage of cost

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

14. Conflict/conflict resolution

Strongly-held personal beliefs and principles results in conflict

5	4	3	2	1
☐	☐	☐	☐	☐

Diversity of knowledge, skills and experience are source of conflict Controversy

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

and criticisms can be a positive contributor to the creative decision process

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Protracted conflict persisted in my team

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Individuals accepts resolved personal conflicts in good faith

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

15. Leadership

Leadership is significant for project success

5	4	3	2	1
☐	☐	☐	☐	☐

Is every expert on the project qualified to leader a project team

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Team leaders motivate and convince team members to take ownership for project objectives

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Team leaders must have executed more projects than any other on the project

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Project leaders must have the skill to manage people and other resources

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Team leaders have influence, respect than any member on the team

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

The mark of a team leader is they are innovative problem solvers

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Are particular professional people suited for project leadership

☐	☐	☐	☐	☐
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Thank you for Your Time

Appendix B : Variable Codes

Information is shared freely without restriction to any profession/unit	C1
Parties demonstrate an open and honest communication flow	C2
e-mail/paperless communication is effective	...C3
Meetings are not called at short notices	...C4
Open communication may build trust	C5
Frequent meetings does not retard productivity	C6
Communication flow is honest, consistent & friendly	C7
Formal channels of communication creates bureaucracy	C8
Medium of communication must same for parties	C9
Any party can initiate the information process	C10
2. Team goals & objectives	
understood team's goals and objectives.	T1
Specific goals leads to higher team commitment	T2
Higher participation in goal setting leads to commitment	T3
Our Team is committed to achieve team's goals and objectives.	T
Task objectives should align to project objectives	T5
Everyone on the project team knows and understands the project goals	..T6
Everyone strives to meet project goals at all times.	...T7
3. Quality/Specification	
Material and components are according to specification	Q1
Flexible changes or modifications to project designs	Q2
Fewer defects in delivery & future processes	Q3
Ensures that there is fewer reworks & defects	Q4

Project schedules are detailed and easy to understand	Q5
The satisfaction the end-user experiences with the facility's aesthetics is good	Q6
Features that supplement functions of the product/facility are good	Q7
4. Competence	
Project management/contractor groups has a track record of experience	Cp1
Team members have the necessary expertise and skills to perform the tasks	CP2
Opportunity to offer alternatives and innovation	Cp3
Continuous learning improvement of processes and results	Cp4
Ensures strategies for managing unforeseen risks are in place	Cp5
Better decision-making strategies due to open & vast ideas	Cp6
Improved transition into the different project stages	Cp7
Fewer defects in delivery & future processes	Cp8
Consistency in techniques and procedures	Cp9
5. Payment	
Remuneration is commensurate with output	P1
Payment is quick and without delay	P2
6. Project schedule	
Project schedules are detailed & easy to understand	Ps1
Project is completed on time	Ps2
Improved transition into the different project stages or phases	Ps3
Parrrty responds quickly to meet my deadlines	Ps4
Reports and documentation were prepared within the time given	Ps5
unforeseen physical and weather conditions have been considered in project schedule	Ps6
Response to complaints, changes, or clarifications is quick & productive	Pc1
7. Response to complaints	

There is better management of complaint & response system	Pc2
Every person in the organization must be client friendly	Pc3
Better management of client	...Pc4
Interaction are open & friendly	Pc5
Party demonstrate ability to listen	Pc6
Party Chooses the right mode to communicate response	Pc7
8. Health and Safety	
Health & safety procedures are with no incidents	H1
Plans for managing unforeseen projects hazard are in place	H2
Safer working conditions	...H3
Less generation of wastes	...H4
Site is orderly and neat	...H5
Safety is clearly a priority in project.	H6
Exceptional efforts were made to establish effective safety procedures.	H7
Safety record keeping and reporting are well-managed and documented	H8
Project safety inspections are conducted throughout the project.	H9
Project safety inspections are well managed.	H10
9. Procurement processes	
Quick and easy procurement route is followed	Pp1
Tender evaluation is not based solely on cost but quality	Pp2
Open competitive tendering is favoured than the others	Pp3
Sufficient time is allowed for tender	Pp4
There exists early involvement of contractor	Pp5
Each stage of the project process is completed on time	Pp6

There exists tender assessment of quality, not just price	Pp7
10. Project/Work variations	
Engineer ensures that the cost of changes are fairly price	Pw1
Makes sure the cost of variations are introduced as early as possible	Pw2
11. Estimates	
There is negligible or no disparity between actuals & estimate	E1
Estimates must be known by all parties	E2
12. Team integration/work relationships	
There is common support and trust amongst all members of the team	Tw1
Focus is placed on goals and objectives	Tw2
My relationship and contribution to the team is fair and respected	Tw3
There is equal opportunity throughout the design/construction process	Tw4
Every member of the team operates with a 'no blame' culture	Tw5
Achievements are shared throughout the team	Tw6
There is true commitment, cooperation & understanding of each others' needs	Tw7
Focus is placed on shared goals and ideas	Tw8
Fewer or no conflicts among the project team	Tw9
There is no fragmentation of the project team	Tw10
13. Cost of project	
There are no cost over runs in the projects	Ct1
Contingency is accurate	Ct2
Engineer, architect & contractor foresee possible future cost implication	Ct3

Cost is effective if variation is compared relative to the budget, and net present valueCt4

Project cost continuously monitoredCt5

Cost issues must be discussed dispassionatelyCt6

Cost performance is measured using the indicators of unit cost, percentage of cost Ct7

14. Conflict/conflict resolution

Strongly-held personal beliefs and principles results in conflictCr1

Diversity of knowledge, skills and experience are source of conflict Cr2

Controversy and criticisms can be a positive contributor to the creative decision process Cr3

Protracted conflict persisted in my team Cr4

Individuals accepts resolved personal conflicts in good faith Cr5

15. Leadership

Leadership is significant for project success Ld1

Is every expert on the project qualified to leader a project team Ld2

Team leaders motivate and convince team members to take ownership for project objectives
Ld3

Team leaders must have executed more projects than any other on the project Ld4

Project leaders must have the skill to manage people and other resources Ld5

Team leaders have influence, respect than any member on the team Ld6

The mark of a team leader is they are innovative problem solvers Ld7

Are particular professional people suited for project leadership Ld8