

**INVESTIGATING THE PRACTICE OF CONFLICT
MANAGEMENT IN CONSTRUCTION PROJECTS IN
KENYA**

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**Investigating the Practice of Conflict Management in Construction
Projects in Kenya**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university

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DEDICATION

I would like to dedicate this work to my wife Lizzy and daughter Tamara for giving me home comfort, love, support, patience, and encouragement throughout the time of my study.

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To my Lord God almighty be the glory and praise for making this seemingly impossible task humanly possible.

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ACRONYMS AND ABBREVIATIONS

ADR	Alternative Dispute Resolution
BOT	Build Operate and Transfer
CAK	Competition Authority of Kenya
CIP	Construction Industry Policy
CPM	Construction Project Manager
DB	Design and Build
GDP	Gross Domestic Product
KNBS	Kenya National Bureau of Statistics
NCA	National Construction Authority
PMBOK	Project Management Book of Knowledge
RSI	Relative Severity Index
TCE	Transaction Cost Economics
UK	United Kingdom
UN	United Nations
VAT	Value Added Tax
VIF	Variance Inflation Factor

ABSTRACT

Conflicts in construction projects seem an increasingly prevalent phenomenon in Kenya, which keeps increasing perhaps because of the projects' uncertainty, complexity, and diversity of participants. Management of these conflicts remains ineffective; prompting the urgent need for effective conflict management strategies. This study sought to investigate the practice of conflict management in construction projects in Kenya to develop a schematic framework for managing conflicts in construction projects, using project harmony potential as a measure of the occurrence of conflicts or their lack in construction projects. The study adopted a survey research design where questionnaires were used to collect data from project developers, contractors, and consultants working in consultancy or contractor firms. Both quantitative and qualitative paradigms were adopted in this research. Random sampling was used to identify the 122 respondents. Data obtained was analyzed using descriptive statistics, relative severity index analysis, Pearson's correlation, inferential analysis, and thematic analysis. A statistical model was developed, explaining 69.1% of the project harmony potential, using the key factors influencing successful conflict management. These factors encompassed delay management, project team partnering orientation, direct provisions for conflict resolution in the Project Handbook, promptness of monitoring and evaluation work, CPM technical experience, and communication plan. Furthermore, the research synthesized a schematic framework for managing conflicts in construction projects, providing a systematic and comprehensive approach to conflict resolution. The developed model not only enhances project harmony potential but also serves as a valuable tool for generating feedback, enabling continuous improvements in future projects.

Keywords: Conflict, Dispute, Project participants, Project harmony potential, Conflict Management strategies

CHAPTER ONE

INTRODUCTION

1.1 Background to the Problem

The construction industry is renowned for its complexity, involving various stakeholders, intricate processes, and substantial financial investments. In addition, the construction process takes place in a profit-oriented and commercial-sensitive environment. As construction projects evolve, the potential for conflicts among project participants becomes increasingly inevitable (Soni et al., 2017). Conflict, in this context, refers to the presence of disagreements, disputes, differences of opinion or incompatibility between people working towards a common objective (Agwu, 2013). Several authors such as Musonda and Muya (2011), Ntiyakunze (2011), Serpella et al. (2014), Soni et al. (2017), Leong et al. (2014) and Zitulele (2021) attribute the biggest execution failure of construction projects to conflicts, maintaining that conflict is an inevitable by-product of the organizational undertakings. Kingsley (2015) attributes this to the fact that despite the project team drawing from different backgrounds and knowledge in different fields, each project participant has their own individual objectives, views, and perspectives which at times could conflict with the general objectives of the organization. In his study, Agwu (2013) argues that the temporary nature of construction projects and their multi-organizational structure result in them being prone to conflicts. These studies unwrap a striking increase in conflicts and disputes in the construction industry of many countries worldwide.

These conflicts may manifest in many different forms which undermine the successful execution of construction projects, such as: The allocation of resources as asserted by several authors including Ntiyakunze (2011) and Zitulele (2021), information relevant to effectively execute the project in order to reach the expected deliverables satisfactorily posited by Ntiyakunze (2011), Li et al. (2012) and Tipili et al. (2014), differences in modus operandi issues, given the differences in the understanding of people from various disciplines, or people having different experiences or preferences on what constitutes correctness, and competing priorities (Soni et al., 2017; Zitulele,

2021). The researchers further contend that managing conflict effectively is crucial for project success, ensuring timely completion, cost-effectiveness, and maintaining a positive working environment. The consequences of unresolved conflicts, according to Soni et al. (2017) are significant, ranging from project delays and cost overruns to damaged relationships and reputational harm for the parties involved. Some of the recommendations for conflict management practice made by several authors among them Ejohwomu et al. (2016), Soni et al. (2017), and Zitulele (2021) include proactive conflict prevention, early intervention, and the establishment of effective communication channels among project participants, the key variable being an attempt to urge all project participants to participate rather than compete with each other, with an highlight on the need for a nuanced understanding of political, environmental and cultural factors that influence conflict dynamics with the construction projects. Agwu (2013) recommends among others: promotion of industrial democracy, regular management/ employees meetings, and strict implementation of collective agreements and regular review of personnel policies.

In Kenya, the construction industry has experienced significant growth in recent years, mostly attributed to the implementation of infrastructure development projects, the process of urbanization, and economic expansion. As construction activities intensify, so does the potential for conflicts arising from diverse stakeholder interests, regulatory uncertainties, and resource constraints. A paper presented at the continuous professional development workshop for Architects and Quantity Surveyors by Muigua (2016) asserts that projects need teamwork in order to be implemented and delivered as planned. Achieving this is imperative for project harmony, thus improved project success. Despite this, however, disputes continue to occur. Indeed, they are envisaged in contracts hence the Dispute Resolution Clause found in various standard form contracts used in construction projects in Kenya. He accredits cultural diversity among project participants, including differences in communication styles, decision-making processes and misunderstanding of the project's goals and objectives to result in to conflicts if not effectively managed. He further notes that project managers' knowledge and experience in dispute management is very crucial, as the conflict management strategy adopted per case has an influence on the outcome.

In his study of project delays in Kenyan high-rise projects, Talukhaba (1999) observed that the key factors that cause disputes leading to project delays are associated with the project participants and their interrelations, the process and the environment of project implementation, majorly on problem and dispute resolution approach used by the project participants. He further asserts that conflicts breed an adverse environment in the project, promote distrust, and subvert the cooperative nature of the building process, sometimes leading to legal issues. These disputations often give rise to the need to acknowledge and plan for possible conflicts and any changes that may arise.

A study by Musonye (2014) on the effects of conflicts on project team productivity at mastermind tobacco Kenya limited attributes conflicts to be a result of project leadership, organizational structure and stakeholder involvement but to varying extents thus a paramount need to address and manage conflicts to improve on project team productivity as a way to increase the overall performance of the organization. These findings are supported by a research by Maresi (2021) on the relationship of conflict management strategies and organizational performance of microfinance institutions in Nairobi, who asserts that the management of an organization plays a major role in the mitigation of conflicts and thus strategies for conflict management are crucial with the management level of any organization. On the other hand, Kituku (2015) established that arose out differing opinions and misunderstandings, adding that managers who empower and motivate subordinates adopt the problem-solving strategy in resolving conflict, thereby fostering a positive work environment, and that compromise, as opposed to dominance, contributed to the accomplishment of the organization's objectives. Other crucial factors established by the study as having a significance to the attainment of the organization's goals include; one's position in the organization, conflict resolution strategy adopted and cross-cultural factors. These studies express the need for speedy, efficient and cost-effective resolution strategy, since conflicts not only hampers the progress of projects but also erodes trust among stakeholders. However, effective conflict planning and control demand an in-depth understanding of their nature and sources, to set up mechanisms and strategies for their effective management and prevention in the timeliest and cost-effective manner, if the project is to be successful.

1.2 Statement of the Problem

The problem investigated in this study is that management of conflicts in construction projects in Kenya is ineffective. The literature on conflict management strategies in construction projects in Kenya is itself limited and fails to address the distinctive issues and complexities of the Kenyan construction sector. Many studies often overlook cultural, social, and economic factors influencing conflict resolution strategies. This lack of comprehensive, context-specific analysis is crucial for developing tailored conflict management strategies that account for cultural nuances, legal frameworks, stakeholder relationships, and socioeconomic factors. In addition, while construction projects tend to have participants from such a wide background and competencies, including inter alia, laborers to foremen, consultant team, clients, and institutional regulators, each with a specific role to do, the main standard contract forms (JBC, PPRA, and FIDIC) and the principles of the Project Management Body of Knowledge (PMBOK) focus on addressing conflict management between contractors and employers. These project participants are bound to the main contract using different sets of contract documents. On most occasions, these contract documents; contracts between the main contractors and sub-contractors, and contracts for the respective consultants are not formalized and when they are, they don't adequately cover issues on operational relationships and management of inter conflicts amongst these diverse entities.

Conflicts among project participants can lead to the impossibility of successful construction project delivery if not managed actively and at the right level to encourage early and effective settlement. These conflicts can result from perceptions of threats from fellow project participants, a blame game among project participants, and low management success (Fenn et al., 1997 in Kingsley, 2015). Enhancing the structure of the current conflict management system to incorporate all potential conflicts among project participants would increase the probability of project management success. Hughes et al. (2009) argue that the development of a good framework for conflict management that reduces the conflict ties between project participants will result in improved awareness of other team members, improved decision-making, stimulation

of critical thinking, as well as improved quality and resource management, ensuring more time will be spent on advancing the project.

1.3 Purpose of the Study

The aim of this study is to investigate the practice of conflict management in construction projects in Kenya and factors influencing the practice, for the purpose of enhancing the effectiveness of the project delivery

1.4 Objectives of the Study

1.4.1 Main Objective

The main objective of this study is to formulate a strategy for managing conflicts in construction projects.

1.4.2 Specific Objective

The specific objectives of the study that will assist in attaining the above aim are:

1. To describe project harmony potential for construction projects in Kenya.
2. To describe the practice of conflict management in construction projects in Kenya.
3. To evaluate significant factors that influence project harmony potential in construction projects.
4. To explain the relationship between project harmony potential and its influencing factors.

1.5 Study Hypothesis

Project harmony potential is influenced by ten explanatory variables. The relationship amongst these variables may generally be expressed as follows:

$$Y = \beta_0 + (\beta_1 X_1 + \beta_2 X_2 \dots \dots \dots \beta_i X_i) + \varepsilon$$

Where:

- Y is the project harmony potential in a construction project (This variable, Y, will be proxied by nine criterion variables, Time, cost, quality, stakeholder involvement, project environmental impact, operational safety and health, user satisfaction and mutual trust. These nine variables will be integrated into one dependent variable)
- β_0 is a constant (intercept of Y, the predicted value for Y when $X = 0$)
- β_i is the i^{th} regression coefficient of the i^{th} independent variable (χ_i);
- $\beta_i > 0$, and is sufficiently large as to make X_i have a significant influence on Y;
- χ_i refers to the i^{th} independent variable;
- ε is the regression error

The predictor variables (x) in the equation are; Delay management, Suitability of project by environment (political, social, economic, etc), Partnering orientation of the project team, Direct provisions for conflict management in the Project Handbook, Promptness of Monitoring and Evaluation work, technical opinions, CPM technical experience, Expertise of the CPM on psychology and criminology, Communication plan in the project, and Personality management.

Null Hypothesis (H_0): $\beta_i = 0$ for all relationship coefficients of x_i . This means that predictor variables have no effect on the projects' harmony potential.

Alternate Hypothesis (H_1): $\beta_i \neq 0$ for at least one of the relationship coefficients of x_i . This implies that at least one of the predictor variables affects the project harmony potential level.

1.6 Significance of the Study

The study was designed to determine to what extent different strategies of conflict management contribute to project harmony potential and formulate a framework for managing conflicts in construction projects in Kenya. Findings of study provides additional knowledge and understanding of the various factors that cause conflicts among project participants in Kenya. The study also provides more knowledge on the impact of construction conflicts on performance. Moreover, it helps to determine the predominant strategies that can be used in management of conflicts. The information

obtained through this study can help in improving the management of conflicts as well as resolve or reduces the occurrence of conflict in construction industry. Achieving an increased harmony potential level during the execution of the project imposes inherent benefits on project stakeholders, as it empowers the contractor to effectively control temporal fluctuations. Moreover, clients are able to reap substantial rewards for their financial investments, given that they get good quality of work at a desired cost and at reasonable time period.

1.7 Justification of the Study

Building construction projects such as residential dwellings, schools, shopping malls, hospitals, office spaces, etc. are an integral part of our daily life. The common goal of the stakeholders when undertaking such projects is to have a successfully executed project that meets the set specification, and is within the set timeline and budgetary allocations. However, according to Kingsley (2015) this is not always the case. He affirms that conflicts become an ordinary occurrence in construction projects, thus subverting the project success level. Inherently, therefore, there is a critical need to delve into the dynamics of conflict resolution within the construction industry. As a fundamental sector contributing significantly to the country's economic growth and infrastructure development, understanding and improving conflict management practices in construction projects become imperative.

Firstly, conflicts are an inherent part of construction projects, arising from the intricate interactions among various stakeholders such as contractors, project managers, engineers, and regulatory bodies. This research endeavours to explore these conflicts comprehensively, aiming to identify prevalent conflict management practices that nurture positive stakeholder relations. By doing so, it seeks to foster collaboration and effective communication among stakeholders, creating a conducive working environment essential for harmonious execution of projects.

The study also recognizes the profound impact of governmental regulations and therefore aligns with the need for guidelines and policies governing conflict resolution in construction projects by understanding and dissecting the practice of conflict management. Insights derived from the study can contribute to the development of

structured frameworks that ensure adherence to industry standards, essential for political stability need for sustained construction sector growth. Technological nuances are another crucial consideration for this research, forming an integral part of contemporary construction. The research aims to identify technological tools and innovations that can serve as catalysts for conflict resolution. This forward-looking approach is poised to contribute to the adoption of cutting-edge technologies, thereby elevating the industry's conflict management efficiency.

Moreover, the study contributes to the professional development of individuals in the construction industry. By providing insights into conflict management practices, the research equips construction professionals with valuable knowledge, fostering continuous improvement, refinement of their skills, stakeholder collaboration, and adoption of technological evolution. At its pinnacle, the study seeks not only to understand but to catalyze positive change by formulating a framework that stands as a beacon for effective conflict management, guiding the construction industry toward heightened efficiency in conflict management in construction projects.

1.8 Scope of the Study

The study was based on the internal conflicts that occur in building projects; conflicts occurring within the project teams in project organizations and vehicles. The research focuses on the key participants of building projects, namely Project Managers, Architects, Quantity Surveyors, Engineers and contractors (construction firms) registered with the relevant regulatory bodies.

Geographically, the study was done within Nairobi County, Kenya. This is due to the fact that the county has the highest level of construction activity within the country. The proliferation of construction projects in the county allowed convenient access to the consultant firms. As per the NCA register, the county also has the highest concentration of contractors compared to the rest of the country. The study encompasses a diverse range of construction projects, such as residential, commercial, infrastructure, and public projects. The object of observation was the conflict management strategies within construction projects while the unit of analysis was the construction projects, with a keen interest in understanding the dynamics of conflict

management as experienced by project managers, architects, quantity surveyors, engineers, and contractors. A survey design was adopted and questionnaires distributed to contractors who were chosen at random.

The independent variables included delay management, suitability of the project by the environment (political, social, economic, etc.), partnering orientation of the project team, direct provisions for conflict management in the Project Handbook, promptness of Monitoring and Evaluation work, technical opinions, CPM technical experience, Expertise of the CPM in psychology and criminology, communication plan in the project, and personality management while the dependent variable is the project harmony level, measured by parameters of project success, including: time, cost, quality, stakeholder involvement, project environmental impact, operational safety and health, user satisfaction, and mutual trust.

1.9 Limitations of the Study

The research faced a few challenges, especially during the data collection process. This is due to the closure of most of the construction sites and offices as a result of measures put in by the government following the outbreak of COVID-19. Thus, most of the respondents were working remotely with most construction site operations being suspended. To salvage the situation, the research majorly relied on emailed questionnaires in google forms to maintain minimum physical interaction.

There was concern that a subset of the intended respondents might have been unwilling to share information about their projects out of fear that doing so would reveal the confidential details of their project execution. Nevertheless, every effort was made to provide the intended respondents with the assurance that the research was conducted exclusively for academic purposes and that their responses would be treated strictly confidential.

1.10 Study Organization

This study report consists of five chapters. Chapter One covers background to the problem, statement of the problem, purpose of the study, objectives of the study,

research questions, justification of the study, scope of the study, limitations of the study, the assumptions made in the study, and the study outline.

Chapter Two includes literature review from authoritative texts books and previous research work. The theoretical framework and conceptual framework are also presented. Chapter Three covers research methodology by discussing the research instruments and methods of data collection.

Chapter Four includes research findings, data presentation and data analysis. Finally, Chapter Five covers conclusions and recommendations based on the research finding. Additionally, areas of further study are given in this chapter

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature of key concepts of conflicts, their nature and management approach. The chapter first reviews the nature of the construction industry in Kenya inter alia; the characteristics of the industry in general, the regulatory framework used, Key participants in the industry, Major classification of conflicts comprising relationship or emotional conflicts, and task or cognitive conflicts which are regarded as the main categories of conflicts, functional and dysfunctional conflict phenomenon, conflict in organizations, internal conflicts in the construction industry, Further, the chapter reviews the main sources of conflicts in construction projects based on previous documentation by other researchers and then reviews various approaches to conflict management. The chapter ends by giving the conceptual framework and amplifying the research hypothesis.

2.2 The Nature of the Construction Industry in Kenya

Kenya's construction industry is a large, dynamic, and complex industry sector that forms a key driver to the development and country's economic growth as it contributes immensely to the Gross Domestic Product (GDP) of the country and infrastructural development, with Kenya as a country being regarded as the regional hub for trade and finance in East Africa, and many large corporations having their African headquarters in Nairobi. The country's 2021 Economic Outlook, puts the construction industry as one of the major sectors drawing investors into the country. As Gitau (2000) argues, the performance of the construction industry indicates the performance of the country's economy and has an associative relation with other sectors through the demand for materials, labor, and infrastructure services. Improved performance of this sector, therefore, attributes to wealth and employment creation. The construction industry has displayed mixed signals in its performance. However, despite the existence of challenges curtailing a sustained improvement, there has been a gradual steady growth in performance in the recent past. The Construction Industry Policy

(2018) gives a synopsis of some challenges that need to be addressed by policy interventions so that industry performance can be enhanced. These challenges include the following: Low projects completion rates; Lengthy procurement procedures; Low accessibility to affordable project financing; Incompatibility of policies, laws, and regulations; Low exposure level and technological uptake of international best practices by stakeholders; Use of unfitting construction material; Poor quality of works resulting from poor workmanship and use of substandard materials; Unethical conduct combined with unfair business practices; Inadequate skilled and competent workforce; Lack of a standard framework for monitoring and evaluation; Lack of adequate capacity to enforce standards and regulations; and Poor safety and health management practices.

2.2.1 Regulatory Framework and Industry Associations

The government regulates various sectors of the economy to ensure that the consumers reap maximum benefits as opposed to letting market forces determine how things are run. The Competition Authority of Kenya (2017) in its analysis of the state of competition in the construction industry defines regulation as a means of accomplishing objectives that go beyond pure competition goals such as the implementation of universal policies to ensure access to basic services and subsequently contributing to economic growth that may otherwise not be achieved. Consequently, every country regulates some sectors of its economy at any given time.

In Kenya, the construction industry is regulated by the National Construction Authority (NCA). The NCA is established under Act No. 41 of the 2011 Laws of Kenya (National Construction Authority Act No. 41 of 2011, 2012). Its primary focus is on regulatory compliance and enforcement, with a focus on conflict management. NCA regulates construction practitioners, ensures compliance with building codes, standards, and regulations, and provides a platform for dispute resolution. It collaborates with other regulatory bodies to streamline processes, enhance industry standards, and promote accountability and transparency in the construction sector. The NCA works alongside other government parastatal bodies in the wider spectrum of

construction like the Kenya Urban Roads Authority (KURA), Kenya Rural Roads Authority (KeRRA), and Kenya National Highways Authority (KeNHA).

In addition to government parastatals, there are governing boards and industry associations that are mandated to regulate the market and monitor the conduct of players in the industry. These include the Board of Registration for Architects and Quantity Surveyors (BORAQS), the Engineers Board of Kenya (EBK), the Architectural Association of Kenya (AAK), and the Institute of Quantity Surveyors of Kenya (IQSK). The BORAQS, established under Section 4 of Cap 525 Laws of Kenya, regulates and oversees the practice of architecture and quantity surveying in Kenya. It is responsible for registering professionals, ensuring compliance with professional standards, and adjudicating disputes within the industry (Architects and Quantity Surveyors Act, 2010). BORAQS promotes adherence to professional ethics and standards, preventing conflicts arising from unethical practices. It also serves as a forum for resolving disputes between professionals, clients, and other stakeholders involved in construction projects through mediation and arbitration processes. The AAK advocates for architects' interests and promotes a conducive regulatory environment for the practice of architecture. It offers dispute resolution services to its members, facilitating mediation, conciliation, or arbitration processes to address conflicts during project delivery.

On the other hand, the Institute of Quantity Surveyors of Kenya (IQSK) contributes to the management of conflicts by ensuring the competency and integrity of Quantity Surveyors through education, training, and certification programs, setting rigorous standards for professional qualifications and continuing education. It also provides advisory services on best practices in quantity surveying, cost management, and contract administration, promoting transparency, accountability, and efficiency in project delivery. Other industry players include the county governments. In the construction sector, these are in charge of land survey and mapping as well as county public works and drainage in urban centers.

Laws and dictates by the National and County governments touching on health, safety, environmental concerns, and other issues are regulated by various Acts in the

respective areas. These regulations more often than not, raise construction costs while also reducing the level of competition in the industry. An overview of the government Acts has been provided in Table 2.1. According to Ndumia (2015) determining the congenial relationship between competition enforcement agencies and sectoral regulators is an intricate and complex one, and depends on a nation's legislative and regulatory structures as well as the proper balancing of competing regulatory and market-oriented objectives to avoid any resulting conflicts. This also depends on the Kenyan government's conviction in the market's efficiency, to choose outcomes that are best for consumers and the economy as a whole.

Table 2.1: Synopsis of the Other Relevant Government Acts

	Foundation Role	Statutory mandate imposed by the Act	Significance/ Contribution to Conflict Management
1. Physical Planning Act Chapter 286	Provides the legal framework for regulating physical development in Kenya.	Requires regional and local authorities to adopt Physical Development Plans per this Act and provides for control of development and subdivision of land.	Provides mechanisms for resolving disputes related to physical planning and development, including appeals, mediation, and arbitration through County Physical Planning Committees and tribunals, thus promoting transparency and accountability in conflict resolution processes.
2. Environment Management and Coordination Act (Amendment) of 2015	<ul style="list-style-type: none"> Establishes the National Environment Management Authority (NEMA) Requires an environmental impact assessment (EIA) preliminary report to be undertaken by a registered expert on a project before its construction. The lead environmental expert must be registered with NEMA. 	<p>The Act provides for environmental protection through;</p> <ul style="list-style-type: none"> Environmental impact assessment Environmental audit and monitoring Environmental restoration orders, conservation orders, and easements 	<p>Plays a vital role in managing conflicts related to environmental degradation, pollution, and natural resource management.</p> <ul style="list-style-type: none"> EIAs help identify and assess environmental risks associated with construction activities, reducing conflicts. Regulations through permits minimize pollution, waste management, and habitat destruction. Enforcing pollution control regulations addresses incidents, while stakeholder involvement in environmental management addresses land use, resource allocation, and environmental justice. Compliance with environmental standards deters illegal activities, degradation, and natural resource exploitation, promoting sustainable development and environmental conservation.
3. Engineering Technology Act No 23 of 2016	<p>Establishes the Kenya Engineering Technology Registration Board.</p> <p>Establishes requirements for one to work as a</p> <ul style="list-style-type: none"> Professional engineering technologist, consulting engineering technologist, certified engineering technician 	<p>Establishes standards for engineering practice, registration requirements for engineers, and mechanisms for enforcing professional ethics and disciplinary measures</p> <p>For one to be a consultant Engineer, he must be registered with EBK as a Professional Engineer;</p>	<p>Ensure the competence, integrity, and accountability of engineers and engineering firms.</p> <ul style="list-style-type: none"> Registration and professional ethics ensure engineers meet minimum competency standards, reducing conflicts arising from incompetence or malpractice. Upholding professional ethics minimizes conflicts of interest, bribery, corruption, and misconduct.

Foundation Role	Statutory mandate imposed by the Act	Significance/ Contribution to Conflict Management
		<ul style="list-style-type: none"> • CPD ensures engineers stay updated with technological advancements and regulatory requirements, reducing conflicts related to outdated practices. • Enforcing disciplinary measures addresses breaches of professional ethics, while compliance with quality standards minimizes conflicts related to poor workmanship or construction defects.

Source: (Construction Industry Policy, 2018)

2.2.2 Key Stakeholders in Building Projects

The construction industry is characterized by differing social-cultural, economic and political environments, and a group of participants or organizations with diversified cultural and knowledge values arising from their specific professions. The stakeholders engaged; work in teams, despite, sometimes, not having known each other before. The team formed can be considered effective if it is able to deliver a project successive without losing its members and satisfying the needs of each individual member (Yang & Shen, 2015). According to Ullah (2023) the success of the project is measured by the satisfaction of the client while that of the members by expression of their happiness and want to continue working together. There are numerous stakeholders and participants involved in a construction undertaking. The list of possible stakeholders is extensive, but based on the traditional procurement approach which is widely applied in building projects in Kenya, the key participants include; developer/ client/ financier, consultancy team inter alia architect, quantity surveyor, engineers (structural, civil, and services engineers), contractors, sub-contractors, and in some projects, a project manager.

These stakeholders may be categorized as internal or external interconnected with each other in a network of professional relationships and interact throughout the project from procurement of consulting services as shown in Figure 2.1, where each stakeholder involved has a take and a give to achieve the success of the project during their interactions, as alluded by Ntiyakunze (2011) on his study of conflicts in building projects in Tanzania. Therefore, the actions of one part directly or indirectly affect the interests of other parties in that professional network. Project owners or clients are an internal stakeholder and have overall managerial responsibility and power the project owner may be a consortium which may delegate management responsibility. These, according to Yang and Shen (2015) are often linked to a financial stake; and organizations or individuals who have a contractual relationship with the project owner. Local communities, government, potential users, regulators, environment groups and the media are external stakeholders. They may have varying attitudes towards a development and may also seek to influence a project through campaigning and political lobbying, regulation or direct action. Lakew et al. (2022) posit that for

the teams to be effective they must be able to establish their task by setting objectives, deciding plans and defining roles and responsibilities. But to help the team to work together productively there is need to create open and honest communication channels, establish team values and develop ground rules. Failure to address these issues leads to infighting and no task to accomplish (Yang & Shen, 2015). Stakeholder engagement refers to the formal process of relationship management through which projects and organizations interact with stakeholders in order to support and promote their mutual interests thereby reducing risk and advancing their current circumstances. This emphasizes the need for those involved in construction undertakings to have knowledge about the stakeholders or participants involved in a project, the risks that they face and how they approach risk management in order to develop a good working relationship with them. A number of studies point to the acknowledgement that stakeholders and major participants often hold a position of some power in a project. Stakeholders are directed by a need to manage threats, opportunities and uncertainties about the performance of a development and to impose their will in the relationship to achieve a desired goal. Consequently, they have the ability to affect the progress and type of outcomes associated with any project (Kingsley, 2015; Femi, 2014; Agwu, 2013; Ntiyakunze, 2011). It is imperative that any organization and project is aware of their stakeholders and the influence that they can exert through their use of power. These stakeholders must be monitored and proactively managed to control their potential impact

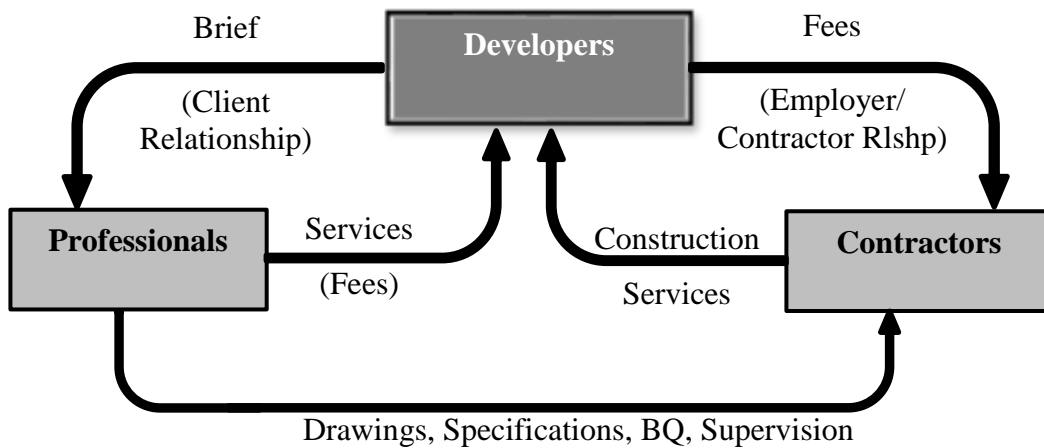


Figure 2.1: Relationship between the Lead Players of the Construction Industry

Source: (Adapted from Ntiyantuze, 2011)

2.3 Approach to Conflict

2.3.1 Definition and Historical Evolution of Conflict

Conflict is defined in the free dictionary as a state of resistance, dissonance, or incompatibility between and among individuals over views, interests, impressions, beliefs, notions, behavior, or goals. The term ‘conflict’ is not frequently used in the construction industry, at least in communications between parties (Ejohwomu et al., 2016; Yiu & Cheung, 2007; Kassab et al., 2010). The last hundred years have witnessed a great evolution in the different approaches used to examine conflicts. Rahim (2001) cited in Ntiyakunze (2011) asserts that the early organizational theorists, like Taylor and Weber, disregarded the perspective of considering conflict as a phenomenon in itself but as an aftermath of ineffective organizational structures and processes. The first to perceive conflict as a phenomenon were social psychologists, such as those involved with the Hawthorne experiment in the 1920s and 1930s which saw the beginning of a new way of looking at human behavior.

The approach to conflict has developed and transformed from the late nineteenth century to today; that is from the traditional view of conflict which considers it as having a negative impact and felt that conflict should be avoided as it leads to poor

performance, aggression, and devastation if left to escalate. Then secondly, the contemporary view in the Mid 1940s to 1970s, suggests that conflict, is inevitable and natural, and depending on how conflict is handled, conflict can be negative or positive (Marchewka, 2006). As research and theorizing progressed, a generally accepted definition of conflict was developed. Conflict in general terms has been defined as the perception that a party's interest or goals are being handicapped by another party, whether real or perceived, and the level of conflict is directed by the degree to which a party is committed to a goal (Mitkus & Mitkus, 2014).

Another definition of conflict is given by Yale and Hardcastle (2003) in the setting of the spectrum by interrelating the terms; "claim", "dispute" and "conflict". They first define claim as "a strong affirmation or assertion of a legal right to money, property, or a benefit enforced by law, which can be built under the contract itself; for breach of the contract, for breach of duty in common law, or on quasi-contractual basis". Yale and Hardcastle (2003) then merely define a dispute as an unresolved claim. They subsequently define conflict by interlinking the definitions they formulated for claims and disputes with sociological definitions of conflicts given above that, conflicts occur where there is an incompatibility of need and perception by one party that this incompatibility interferes with the attainment of that person's needs. These definitions are summarized diagrammatically using Figure 2.2 below as a spectrum of conflicts. From the figure, conflict is shown to range concurrently from when a note of a claim is administered on one end of the spectrum and exists till the claim or dispute is resolved at the other end indicating that any unresolved claim note will lead to a conflict and eventually dispute. The potency and strength of these conflicts intensify through the various phases of the claim.

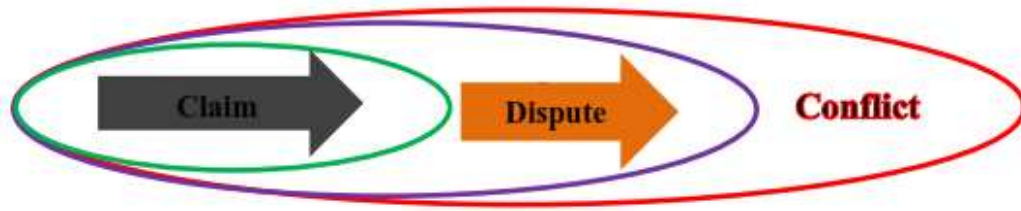


Figure 2.2: Spectrum of Conflict

Source: (Yale and Hardcastle, 2003)

The illustration delves into the comparison of conflict phenomena (episodes) as identified by Pondy (1967) and discussed by Ntiyakunze (2011) to outline various stages of conflicts. It commences with latent conflict, which refers to the underlying source of conflict that is caused by specific factors that predispose conflicts to occur. This latent conflict progressively transforms into perceived conflict, in which at least one side acknowledges the conflict's presence but neither is upset by it. As a result, perceived conflict occurs, putting more emotional burden on the affected people, yet they are unable to resolve it, resulting in increased stress and tension. As tensions rise, visible conflict arises, marked by outwardly aggressive and hostile actions ranging from passive resistance to physical confrontations. Finally, the conflict aftermath arises, incorporating responses to the conflict's settlement or conclusion, which frequently result in major changes in response to the conflict's consequences.

2.3.2 The Concept of Conflict Resolution

Throughout history, many cultures and communities have created several methods to deal with problems. Ancient civilizations used procedures like arbitration, mediation, and negotiation to resolve conflicts, which is the basis of conflict resolution (Alaloul et al., 2019). Ancient civilizations such as Mesopotamia, Egypt, and Greece had developed structured methods for settling disputes inside communities and across states. The Code of Hammurabi in Mesopotamia, for instance, established laws and processes for settling disputes. According to Kegley and Blanton (2014), conflict resolution evolved during medieval Europe with church tribunals playing a crucial part in resolving conflicts. The Treaty of Westphalia in 1648 was a significant development

in international dispute resolution since it introduced ideas of sovereignty and diplomatic discussion among European powers. In the modern era, international institutions such as the League of Nations and the United Nations were created to avert conflicts and encourage peaceful resolutions via diplomacy, mediation, and arbitration (Bercovitch et al., 2009). In addition, the growth of scientific research and the emergence of conflict resolution as a separate discipline had a role in creating ideas and methods for handling global conflicts. Likewise, conflict resolution in construction projects has seen significant growth as posited by Alaloul et al. (2019), from the ancient times, where conflicts were often resolved through informal negotiations or the intervention of respected community leaders or elders, to the emergence of legal systems with courts and arbitration taking center stage in adjudicating disputes as societies become more complex and organized.

Kenya, like to several African nations, possesses a significant history of conflict resolution ingrained in its cultural customs and traditions and shaped by the country's unique socio-economic and legal context. The construction industry in Kenya is diversified, encompassing large-scale infrastructure projects as well as smaller residential and commercial enterprises. In the past, conflicts in the Kenyan construction industry were often settled by informal methods or by pursuing litigation in the formal court system (Oloo, 2018). Kenya, like other nations, has acknowledged the drawbacks of traditional dispute settlement methods and has adopted Alternative Dispute settlement (ADR) as the preferred method for settling construction-related problems. According to Muigua (2017), the legal system has included alternative conflict resolution methods to offer accessible and culturally appropriate ways to resolve disputes. Kenyan laws provide for many types of Alternative Dispute Resolution (ADR), such as mediation and arbitration, which are regulated by statutes like the Arbitration Act and the Mediation Act. These rules establish a structured method for parties to settle conflicts without involving the judicial system, which helps in minimizing the time and expenses linked to legal proceedings. In recent years, there has been an increasing focus on fostering ADR mechanisms in Kenya's construction sector, by implementing training programs, capacity development projects, and setting up specialist ADR organizations (Ndiritu, 2016). These initiatives are intended to

promote a culture of collaboration, communication, and consensus-building among project stakeholders, resulting in more efficient and effective construction projects.

The Dispute Resolution Board (DRB) was established in 1998, as the first independent organization to promote mediation in Kenya as a separate track from arbitration to offer a platform for settling construction-related issues using mediation, arbitration, and adjudication. The DRB has been instrumental in raising awareness and enhancing experience in ADR within the Kenyan construction industry, leading to a decrease in case backlog in formal courts and enhancing the quality of dispute resolution services. The Kenya Construction Dispute Resolution Board (DRB) is one example of this trend, created to offer a platform for settling construction-related issues using mediation, arbitration, and adjudication. The DRB has played an important role in increasing ADR knowledge and experience in the Kenyan construction sector, hence reducing the backlog of cases in the formal court system and enhancing the overall quality of dispute resolution services.

2.3.3 Taxonomy of Organizational Conflicts

Organizational conflict is defined as an open battle or interference between two or more groups in an organization, between two or more organizations. Katz and Kahn (1978) cited in Rahim (2001). Among the earlier theories on organizational conflict are the works of Marx, who looked at organizational conflict based on social contradiction, class struggles, and control. However, none of these theories gives a model that can explain the conflict in organizations thus the need to have an understanding of the dynamics of conflicts in organizations with each organization having complexity of definition, a good example being the construction industry. There are four essential types of conflict in organizations: vertical, horizontal, line-staff, and role conflicts.

a) Horizontal Conflicts

Organizational conflict involves interpersonal conflicts with colleagues or supervisors, or intergroup conflicts within different sections of an organization (Simmons & Peterson, 2000); Agwu, 2013; Kingsley, 2015). Horizontal conflict occurs between

team members of the same hierarchical level, such as managers in the same organization (Stojkovic et al., 2003). Horizontal conflicts manifest themselves for many reasons among them, divergent ideas, disagreement in decisions, and the distribution of resources. Mantel and Meredith (2006) give an example of such a consequence as when the Project Manager tries to pass a stringent cost and time estimate along to functional managers whose units are expected to perform certain work on the project. Conflict then arises when the functional managers complain that they cannot meet the time and cost restrictions, this tends to build failure into the job of managing a project, another source of conflict between the Project Manager and senior management.

b) Vertical Conflicts.

Vertical conflict occurs in a group of different hierarchical levels such as supervisors and salesmen in the same organization. According to Mantel and Meredith (2006), when vertical conflict takes place between operational workers and administration, their sources refer to:

- i. Psychological distance. This is where workers don't feel involved in the organization and feel that their needs are not met.
- ii. Power and status. Workers feel powerless and alienated;
- iii. Differences in value and ideology. This difference represents underlying beliefs on the objectives and goals of an organization and
- iv. Scarce resources, disagreements regarding benefits, salary, and work conditions.

Vertical conflicts could basically occur because your supervisor is always trying to micro-manage instead of letting you do your work.

c) Line-Staff Conflicts

This occurs between support staff and 'actual units' within a department (Stojkovic et al., 2003). The example used by the authors, analyzing the police system, would be

between a police file clerk and an officer who is looking for a cold case file about the administration of documents, files, evidence, etc.

d) Role Conflicts

Role conflict occurs when employees are required to meet incompatible demands and expectations, especially when organizations haven't clearly defined the job functions and responsibilities of their members (Celik, 2013). This can stem from an incomplete or otherwise fallacious understanding of the assignment given to an employee at a specific moment in time (Stojkovic et al., 2003). To explain role conflicts, Stojkovic et al. (2003) use an example, of an officer having conflict due to not fully understanding the assignment they have been given. The effect of conflict is a highly subjective measure according to which party's point of view is taken. According to Simmons and Peterson (2000), organizational conflicts, whether semantic or subjective occur on three levels as demonstrated in Figure 2.3. The Figure demonstrates the nature of conflicts horizontally across departments or vertically between levels of the organization or entity.

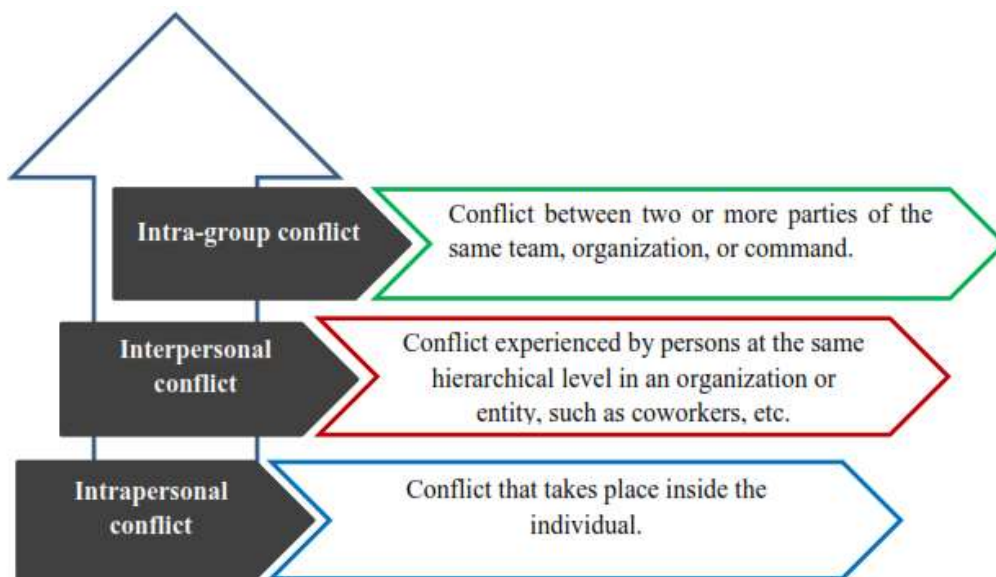


Figure 2.3: Levels of Conflict

Source: (Simmons and Peterson, 2000)

These three levels of conflict can generally be divided to form two major categories, each with a different effect on project execution.

e) Relationship Conflicts

Relationship conflicts can also be referred to as emotional conflicts. According to Simmons and Peterson (2000), relationship conflict is a trait of interpersonal incompatibility generally characterized with tension, annoyance, nuisance, and hostility among team members. This conflict, according to Celik (2013) has three negative consequences for the organization's satisfaction and commitment to excellent decision-making. Firstly, it limits the ability to process important organizational information since the members use most of their energy and time trying to focus on one another rather than concentrating on problems facing the organization as a unit. Secondly, it limits the cognitive functioning of the organizational members by arousing their stress and anxiety levels. Thirdly, it advocates incompatible or ominous views of other members' character and behavior, which can result in a self-fulfilling prediction of enmity and mutual hostility escalating the conflict levels.

f) Task Conflict

Task conflict is also referred to as cognitive or content conflict. It relates to a perception of divergence given the substance to decision as a result of opposing viewpoints, thoughts, ideas, and beliefs among the organizational members. Vaux et. al. (2018) asserts that by enhancing decision quality through constructive criticism, task conflict can greatly organizational performance. In their study, Celik (2013) contends that reasonable levels of task conflict are constructive since they prompt discussion of ideas that help groups perform better. According to the two researchers, the organization can utilize a team member's skills and experience in a more beneficial way when the conflict is task-focused, rather than when conflict is not present or relationship-focused. This means that groups exhibiting a non-occurrence of task conflict may lack imaginative or inventive ways to improve their performance, while very high levels of task conflict may impede task completion.

In the operation of task conflict, some group members may with specific intentions use harsh language, bullying and intimidation tactics, and unwarranted arguments, which can hurt, offend, humiliate or even brutalize other members within the group resulting in relationship conflicts. On the other hand, as Ntiyakunze (2011) contends, it is possible that relationship conflict could trigger task conflict, in an event when one group member tries to sabotage, weaken or undermine any influence that another group member may have. Vaux (2014) uses these two conflict types to explain the differing effects of conflict in construction and how conflict often escalates leading to mediation or litigation and loss of productivity as presented in Table 2.2.

Table 2.2: Differences between Relationship Conflict and Task Conflict

Measurement	Relationship conflict	Task conflict
Focus of conflict	Focused on interpersonal incompatibilities	Focused on task at hand
Cognitive or Emotional Performance	Emotional in nature Performance is diminished at all levels	Cognitive in nature Performance is enhanced at midrange and lowered at low And high levels of conflict
Organizational view	Dysfunctional at all levels	Beneficial at appropriate levels
Outcomes	Decreased decision quality, group consensus, and commitment to group	Increased decision quality, team cohesion, and innovation

Source: (Adapted from Vaux, 2014)

Conflict can take several forms depending on the organization's structure (Mullins, 2013). For example, if an organization adopts a matrix structure as its organizational design, normative conflict is built in, since the system requires each manager to report to two superiors. He asserts this as the primary source of organizational conflicts. Resources such as time, personnel, money, expertise, and equipment are constantly scarce leading to competition for the limited resources among persons or departments. These factors linked to conflicts at the organizational level have been illustrated in Figure 2.4.

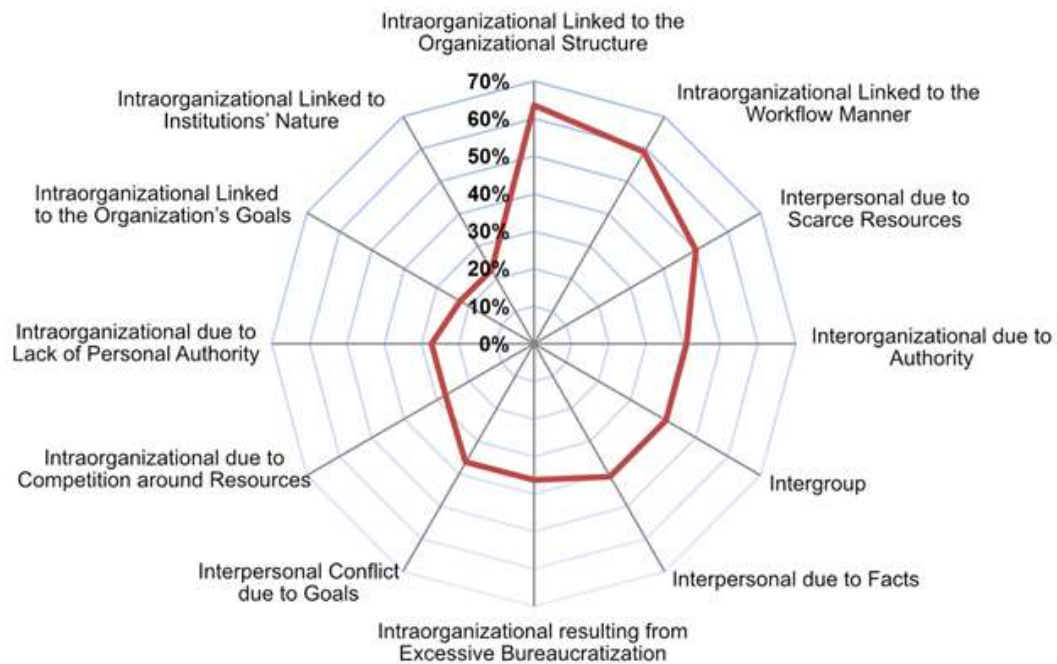


Figure 2.4: Taxonomy of Organizational Conflicts

Source: (Mullins, 2013)

2.3.4 Functional and Dysfunctional Conflict Phenomenon

This is the phenomenon that views conflict as either a disease or an important substance in the organization (Vaaland & Håkansson, 2003). consider the phenomena from two different perspectives. The first perspective views conflict as a negative influence in organizations causing disruptions, dissociations, and dysfunctional effects. In this perspective, there is fear that trivial coherence in the organization's operations can evolve into destructive conflict, therefore a need to resolve the conflict and mitigate or minimize its deleterious consequences. Joyce and William (2018) characterizes dysfunctional conflicts by escalation, polarization, and negative emotions such as rage, resentment, and hostility. They attribute these conflicts to poor communication, misunderstandings, and power struggles, which result in damaging behaviors and results, and in severe circumstances, violence if the conflicts are left unresolved.

In the second perspective, conflict is viewed as a positive view and considered to bring a positive result to the conflicting parties. Positive results of functional conflict

include; Awareness of the conflicting parties on the issues of the conflict, Improvement of working conditions due to accomplishing solutions together, solving issues together to improve overall morale in the organization team, and Making innovations and improvements within an organization. This view is supported by several researchers including Rahim (2001), and Vaaland (2004), who argues that without conflicts, progress and creativity disappear. Tjosvold et al. (2014) posits that conflicts can serve a variety of functions in interpersonal and organizational dynamics, one of the fundamental objectives being to bring to light previously disregarded or suppressed concerns and disagreements, allowing for productive discourse and problem solving. In affirmation, conflicts like the two world wars induced inventions that led to the development of radar, jet-propelled aircraft, the World Bank, and the International Monetary Fund just to mention a few. The cold war conflict led to the development of nuclear power and the space race which provided communication satellites and cell phones widely used today. Vaaland and Håkansson (2003), illustrate how conflict may be functional and dysfunctional by a figure with two axes, the first axis indicate the degree of collaboration between two parties, and the second indicates the degree of conflict in connection with business relationships. Figure 2.5 below reflects that, by viewing collaboration and conflict as two dimensions, it is possible to identify four combinations.

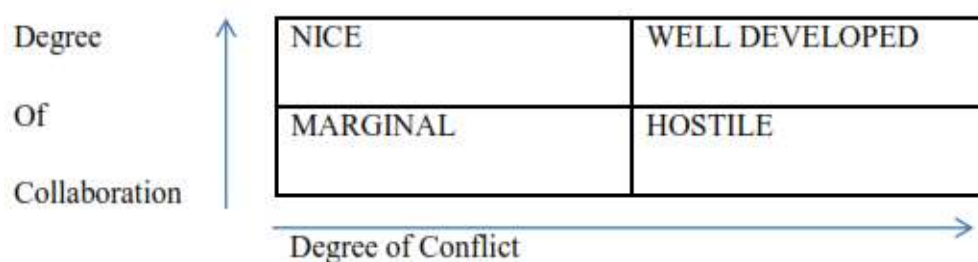


Figure 2.5: Functional and Dysfunctional Conflict Model

Source: (Vaaland & Håkansson, 2003)

According to Vaaland (2004), conflict is viewed as functional when it adds necessary tension and motivation to the relationship that extends opportunities and speeds up innovation and describes conflict as being characterized by either direct or indirect

players; he states that two social units may experience conflict, the result of which may indirectly affect other groups. A good example is a conflict initially between an architect and a contractor. This may result in a project change that affects the function and cost of the building. The change may translate to a reduction in the profit margin for the contractor but increase the short-term utility of the building for the client. From the contractors' point of view, the conflict is clearly dysfunctional. The architect may regard the conflict as functional, and the client may take either view depending on his particular set of values at the time; short-term or long-term utility.

A certain level of conflict in an organization is not only inevitable but desirable, for conflict is both a cause and an effect of change (Jaffar et al., 2011). They further assert that the classification of conflict as either functional or dysfunctional depends on the value systems used. Researchers conclude that conflict may be either functional or dysfunctional and is not necessarily either one. This implies that the effects of conflict must be evaluated relative to some set of values. To address the functional and dysfunctional aspects of conflicts, organizations must adopt a proactive and strategic approach to conflict management. This involves cultivating a culture of constructive conflict resolution, where differences are acknowledged, respected, and addressed through collaborative processes (Rahim, 2001). Organizations can invest in training programs, coaching, and mediation services to equip employees with the skills and tools needed to navigate conflicts effectively. Moreover, leaders play a critical role in modeling positive conflict behaviors, setting clear expectations, and creating an inclusive and psychologically safe work environment (Van et al., 2012)

2.4 Internal Conflict in the Construction Industry

The interactions between project participants greatly affect the whole project performance and have the significance of ensuring project success (Leong et al., 2014). Winch (2006) contented that project participants can be categorized into two; internal and external participants. Internal participants are the parties legally related to the client, who embrace the client on the demand side, such as employees, customers, end-users, and financiers; and on the supply side like project managers, architects, engineers, contractors, trade contractors, and material suppliers. On the other hand,

external participants are constituted of private and public actors. Examples of private actors are local residents, landowners, environmentalists, and archaeologists, whereas the public actors are from regulatory agencies, local and national governments. The internal participants will largely be in support of the project and external participants may be preferent, and insignificant (Winch, 2006). According to Olander (2003), the participants found in a construction project may be depicted in Figure 2.6 below.

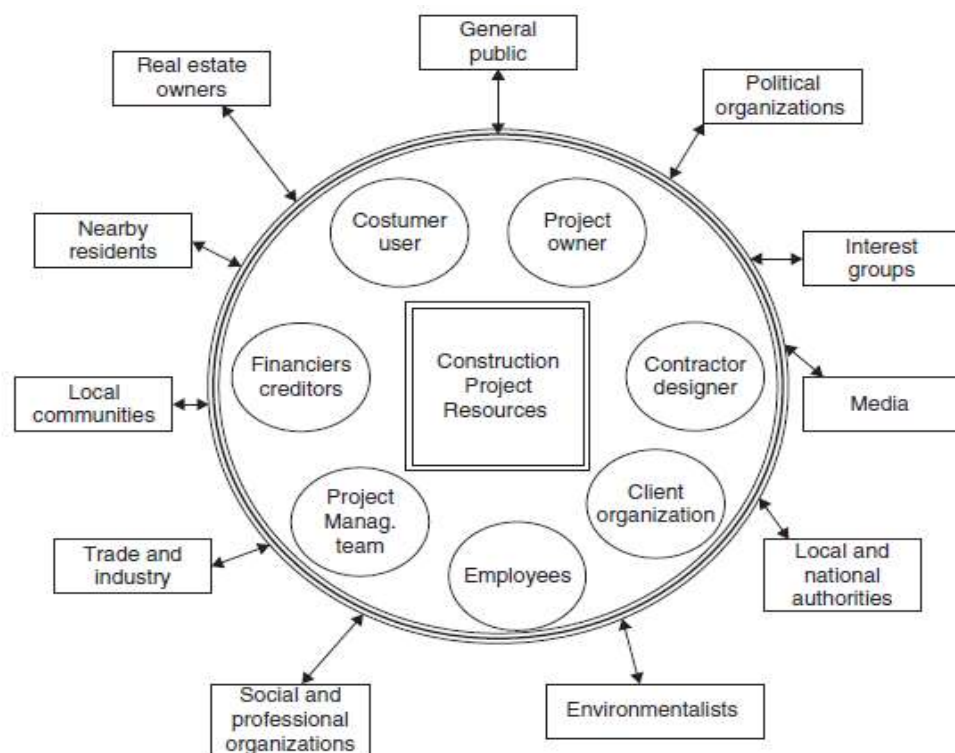


Figure 2.6: Construction Project Stakeholders

Source: (Adapted from Olander, 2003)

Internal conflicts typically involve parties that directly participate in the project such as project developers, project consultants, and project contractors. These are the construction project participants in whom the achievement of a solution can be done within the project site (Olander, 2003). Thus, internal conflict can be said to be conflict among the internal participants of the project.

These conflicts include; conflict caused by poor communication amongst project team members, low price mentality in the engagement of the consultancy team,

discontentment with the work execution progress of the main contractor, and non-payment to sub-contractors by main contractors (Jaffar et al., 2011). To resolve these problems, there is a need to identify the critical factors leading to internal conflict among the project participants to develop a framework that helps manage conflicts, both potential and existing.

2.4.1 The Uniqueness of the Construction Industry

The construction industry is unique, as attributed to a combination of two characteristics; Firstly, the projects (the product) belong to the category of fixed-position manufacturing by having the characteristics of site-based production. Secondly, the product is rooted in one place, bringing with it a lot of uncertainty. For example, soil conditions can vary widely from place to place and are often difficult to determine precisely before actual production. Also, the people and organizations coming together in a construction project will typically exist in that configuration only for the project's duration i.e. Temporary teams (Digvijaysinh, 2013). These characteristics make construction a unique product, unlike other service and manufacturing sectors such as the car industry, where there are opportunities to prototype products and build long-term working relationships (i.e. develop trust). The manufacturers in these types of industries can build cumulative experiences as well as long working relationships with their workers. Besides, the people involved in this type of work can forge a clear understanding of what should be done about the final product as they work with the systematic process of the manufacturing sector in which they are involved. On the other hand, each construction project, especially when it becomes more complex, reflects different or sometimes unique construction processes when compared with other projects.

Moreover, as each of these processes has several interfaces, it is difficult for the parties to develop a mutual understanding of the project (product) before embarking on it and it is at these interfaces that misunderstandings probably occur. Additionally, it is difficult for the parties and the teams involved in project activities to develop long-term working relationships which means that there is a great potential for misunderstanding and less opportunity for trust (Jaffar et al., 2011). He further

contends that in these circumstances, it can be hard to identify misunderstandings before they escalate into conflicts and, potentially, into disputes. The nature and complexity of construction mixed with the multi-discipline nature of the project team can amplify the potential for conflict. According to Jaffar et al. (2011), to some extent, defining the responsibilities of each party or team clearly as the project outset could avoid misunderstandings about the scope of interest and goals.

2.4.2 Inexorable Nature of Conflicts

Friction in the form of but not limited to conflicts, personality clashes, misunderstandings, and petty jealousy occur almost every time human beings interact (Ntiyakunze, 2011). This is to say that where there is a social gathering or an organization, conflict is definitely present, and therefore the project Managers must be ready to manage these frictions, or else the project won't actualize. Soni et al. (2017) believed that in a well-run project team it is possible to settle differences without creating frustration. Lack of management skills in an ever-developing industry prevents project managers and other members of an organization from handling problems effectively, leading to high chances of conflicts. In the early 20th century, many conflicts were considered inevitable, but increasing knowledge of conflict management and professional practice has improved the situation. With increasing knowledge, construction practice will become more professional, which will reduce the number of problems and the occurrence of conflicts.

Both Ntiyakunze (2011) and Soni et al. (2017) confirm that;

- i. Construction suffers more contractual disputes than any other industry.
- ii. The occurrence of disputes has risen recently and continues to rise.
- iii. The performance of the industry is adversely affected by disputes.

2.4.3 Harmony and Conflict Management

Harmony can be indisputably viewed as a state in which team members are tranquil and agree with one another, or where things appear to be right or fitting together. Project harmony potential, as Puttapalli and Vuram (2012) uphold, is "the reciprocal

interaction between the management team and support staff about the terms of employment at the workplace." It is a condition within which workers have a collaborative and steady work relationship, which contributes to higher performance (Wobodo, 2019). This can be used to refer to a condition in which no conflicts are owing to excellent conflict management systems in a project. Newell (2008) held that during a well-managed project team, disagreements and discrepancies could be addressed without causing frustration.

2.4.4 Sources of Conflicts in Construction Projects

Conflicts are often symptoms of a more fundamental problem or underlying source of conflict. On the one hand of any construction project, the contractors' main concern is to complete the project within a set timeline and maximize its profits, while on the other hand, the client/ developer aims at an economic but successful project with no compromise on quality. When these two objectives are considered together, they seem to contradict and may result in conflicts if not well handled.

Studies from different authors have examined the causes of conflicts in construction projects. These have been summarized in Table 2.3 below.

Table 2.3: Causes of Conflicts in Construction by Various Authors

Authors	Year	Causes of Conflicts
Ullah	2023	Defective design, excessive quantity variations, and excessive change orders
Lakew et. al	2022	Failure to identify potential conflict areas, Lack of Periodic Stakeholder Meetings, Failure to understand Stakeholders' needs & Expectations, Lack of strategies and tactics of stakeholders management, Lack of fairness and equity, for all stakeholders, Lack of constant communication with stakeholders, Project Manager's poor knowledge of SM, Failure to identify key stakeholders, Failure to understand relationship between and among stakeholders, Failure to meet information requirements of all stakeholders, Stakeholders' incapacity to participate in discussions, Project scope changes and quality, Client's uncooperative attitude, Incomplete Stakeholder Identification, Inadequate engagement with external

Authors	Year	Causes of Conflicts
		stakeholders, Involvement of numerous stakeholders, Uncooperative Attitude of Stakeholders, Language barrier between stakeholders, Cultural differences between stakeholders
Zitulele	2021	Poor communication, Lack of compromise, Needs not met, Lack of empathy, prejudice, intolerance, self-interest, ignorance, and a desire for power Operating under the assumption
Soni et. al.	2017	Errors leading to claims, Unrealistic expectation, and delay in payments by owner side, Underpricing tender, Errors in design, drawing, and specification, lack of team spirit of participants, lack of communication, misunderstandings among participants, unforeseen/unpredictability, people protest, act of God, use of ambiguous terms in the contract document, use of double meaning terms in these documents.
Ejohwomu et.al.	2016	Delay; site access delay, delay in running bill, delay in a decision by owner, Unrealistic Expectation; scope definition not clear, excessive change orders.
Kingsley	2015	Poor communications; Inadequate design; Economic environment; Poor management; Unrealistic tendering; Inadequate contract drafting; Poor workmanship; Adversarial culture.
Yang & Shen	2015	Differing site conditions, Errors, and omissions in design, Local people obstruction, Excessive quantity of work, difference in change order evaluation, double meaning in the specification.
Tipili et. al.	2014	Inadequate communication
Femi	2014	Delay; site access delay, delay in running bill, delay in a decision by owner, Unrealistic Expectation; scope definition not clear, excessive change orders.
Leong et. al.	2014	Environmental factors, Errors, and omissions in design, Local people obstruction, difference in change order evaluation, double meaning in the specification.
Serpella et. al.	2014	Differing expectations, un-clarified assumptions, inadequate resolution mechanisms
Agwu	2013	Unacceptable terms of employment such as poor hours of work, poor salary and lack of fringe benefits, Poor human relations between management and employees, Non consultation with employees before key decisions affecting them are taken, Perceived autocratic style of managers, Anti-union posture of management, Poor decentralization of decision making and workers nonrepresentation in management, Cumbersome and ineffective means of communicating grievances to top managers, Lack of effective mechanism for the

Authors	Year	Causes of Conflicts
		prevention of conflict, Poor government economic and industrial policies.
Li et. al.	2012	Mismatch in people's perceptions and expectations.
Ntiyakuze	2011	Delays of payments to the contractor by the client, issuing certificates of payments to the contractor by the consultants, poor communication, design changes, errors and mistakes in the design, evaluation of contractor's claims, multiple and different meanings of specifications, incompatibility between the contractor and nominated subcontractors and evaluation of contractor's claims.

Source: (Researcher's own compilation, 2023)

Different standard forms of contract used in Kenya namely; The JBC Agreement and Conditions of Contract for Building Works, April 1999 Edition clause 45, The PPRA Standard Tender Document for Procurement of works, 2021 clause 20 and the FIDIC Conditions of Contract for Construction, 2017 clause 20.4 cover the procedure of dispute resolution in projects whenever they occur. The standard forms of contract also contain other clauses that handle defective design, quantity variations, change orders, errors in design and specifications. However, the inadequacy of addressing communication protocols and stakeholder management strategies, lack clarity on procedures for addressing design defects, quantity variations, and change orders, leading to disputes over responsibilities and costs. In addition, the standard forms lack clear provisions for addressing cultural and language differences among stakeholders, potentially exacerbating communication challenges.

While the different standard forms of contract give standard provisions for addressing dispute of any kind whatsoever arising in connection with, or arising out of the contract or the execution of the works as may be described, through the various Alternative Dispute Resolution (ADR) mechanisms available in Kenya namely; Negotiation, Mediation, Conciliation, Med-Arb, Arb-Med, Dispute Review Boards, Early Neutral Evaluation, Expert Determination, Mini Trial (Executive Tribunal), and Adjudication, the different mechanisms provided have their own challenges. For instance, as argued by Muigua (2017), the mediation process has been criticised as being indefinite, time consuming and does not encourage expediency (Tim & Paula, 2007). Additionally,

Kenya does not as yet have a comprehensive and integrated legal framework to govern the application of mediation in the resolution of disputes and therefore the mediation framework in existence has largely been derived from international law and practice and reduced into guidelines by institutions undertaking mediation in Kenya.

Arbitration, as practiced in Kenya, is increasingly becoming more formal and cumbersome as lawyers enter the practice of arbitration applying delay tactics and importation of complex legal arguments and procedures into the arbitral process (Muigua, 2011). The Civil Procedure Act does not help matters as it leaves much leeway for parties bent on frustrating the arbitral process to make numerous applications in court. While the FIDIC Conditions of Contract for Construction, 2017 clause 20.4 advocate for adjudication, Kenya lacks an Act dealing with Construction Adjudication and parties rely on the Construction Adjudication Rules framed by the Chartered Institute of Arbitrators (Muigua, 2017). There is therefore the need to expand the scope of the Civil Procurement Act and entrench adjudication as a means of dispute resolution as well as a constitutional provision on court ordered adjudication to avoid a situation where attempts to order adjudication by court are thwarted by constitutional references. These Adjudication Rules provide for the basic procedure for adjudication and for adjudication to be applicable, the subject construction contract must have an adjudication clause. Therefore, there is a need for framework to be able to assess risk areas and mitigate conflicts before they result into disputes.

2.4.5 Stakeholder Involvement Conflict

Organizations establish a sophisticated and intricate framework of policies and guidelines in order to resolve conflicts between the organization and the stakeholders, including individuals and groups, with whom it conducts business (Tjosvold et al., 2014). It is critical to observe that the various parties involved do not always concur on the interpretation of a contract provision or a legal statute. Because no agreement, regardless of how comprehensive, can account for every conceivable circumstance that may arise in the complex relationship among the numerous parties involved, our overburdened courts are witnesses to the breadth and depth of conflict (Zitulele, 2021).

Given the dynamic and complex nature of the construction industry, coupled with the involvement of varied project participants with differing beliefs, morals, and interests, the project leader not only is innovative, resourceful, and dynamic but also be able to interact well with people both within and outside the organization if he is to ensure effective and successful conflict management (Joyce & William, 2018). These include all the project participants in their various capacities. Zakaria and Lazim (2018) argue that stakeholder management is the continued engagement of all types of stakeholders, from sponsor to customer, end-user to a team member. Kingsley (2015) asserts that the sponsor is accountable and actively involved in managing specific senior relationships such as the customer. The project manager is actively involved or delegates the stakeholder relationship management to key team members.

2.4.6 Influence of Conflicts in Construction Projects

When not amicably managed, conflict can collapse relationships between project participants with a consequence of delayed projects and projects completed outside the original objectives and goal resulting in reduced profits and gains. There is always a need for the project participants to study potential conflict issues so that they can possess a clear picture of management techniques to use when these conflicts arise (Ntiyakunze, 2011). Further, if specific conflict issues related to time, cost, quality, stakeholder involvement, the sustainability of the environment, and safety in construction are explored, it will be easier to manage the conflict levels as they occur (Leong et al., 2014).

In construction projects, it becomes very necessary to address possible areas of conflict failure which can result in high level of conflict, sometimes progressing into disputes. Conflict situations depend on objectives, goals, plans, methods, and personalities that may result in disputes, which may sometimes lead to litigation. Such escalating situations would involve the participants, additional time, and increased costs (Femi, 2014; Yang & Shen, 2015). In their risk, conflict, claim, and dispute continuum model, Acharya et al. (2006) argue that a conflict can be managed, the requests of a claim can be regulated and a dispute, which could lead to litigation, can be avoided. This is demonstrated in Figure 2.7 below. According to the model, a dispute must be resolved;

it cannot be managed. Disputes are usually resolved by third parties (courts, arbitrators).

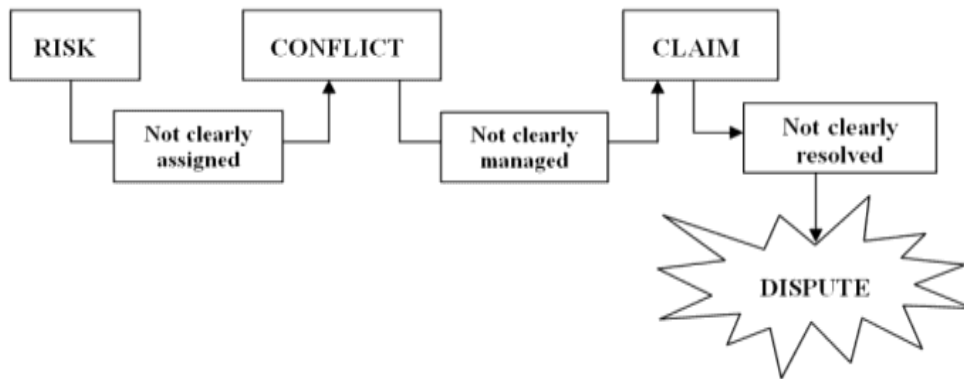


Figure 2.7: Risk, Claim and Dispute Continuity

Source: (Acharya, et al. 2006)

2.5 Conflict Management Approaches

When a conflict is resolved, it can lead to a higher level of satisfaction throughout the organization; however, if not resolved, what appears to be a satisfactory resolution may only be a relapse to one of the previous levels of conflict. The main objective of arriving at an agreement that brings harmony in the project undertaking by improving the relationship between the members of the organization lies in the debate over whether conflicts should be resolved, transformed, or managed (Leong et al., 2014) This approach is based on finding the best interest of the parties, empowering them, and accommodating legitimate needs, to resolve their incompatibility and differences through the understanding of their rights and interests in each other. In his study, Digvijaysinh (2013) argues that when individuals find themselves embroiled in a conflict, they typically grapple with two primary concerns. Firstly, there is the imperative to achieve personal goals. Conflicts often arise when individuals harbor goals that are in direct opposition to those of others, prioritizing their own objectives above all else. Secondly, there is the necessity of maintaining a positive relationship with the other party involved. This is often motivated by the potential future necessity

of collaboration on various projects. However, the significance placed on preserving the relationship may vary depending on individual circumstances.

The modes of managing organizational conflict are as varied as their causes, origins, and contexts (Digvijaysinh, 2013). The causes of conflicts established by different researchers in Table 2.3 can be themed into varied conflict management approaches based on their sources. That is; management through the provisions for conflict management, project monitoring and evaluation in the Project Handbook, management of conflicts through delay management strategies, a clear and effective communication plan, suitable project environmental dynamics, team partnering orientation, and the expertise of the project management team as discussed below.

2.5.1 Project Handbook (PMBOK) provisions for conflict management

The PMBOK Guide by the Institute of Project Management (2013) chapter 9 discusses five conflict resolution techniques namely; avoidance, smoothen, compromise, force and collaborate. Digvijaysinh (2013) uses these five conflict management approaches to generate a conflict resolution model. This was based on a finding that all organizations, however simple or complex, possess a range of procedures or mechanisms for managing conflict, the success of which can be assessed by the way they limit or restrain conflict behavior and conflict-cause factors while at the same time facilitating or helping the achievement of a satisfactory solution. The purpose of conflict management, whether undertaken by the parties in conflict or whether involving the intervention of an outside party, is to contain the destructive components in the conflict process (e.g. hostility, use of violence) and help the parties possessing incompatible goals to find some solution to their conflict. Figure 2.8 below is a model developed by Digvijaysinh (2013) to show how different levels can be used to resolve conflicts and provide an outcome.

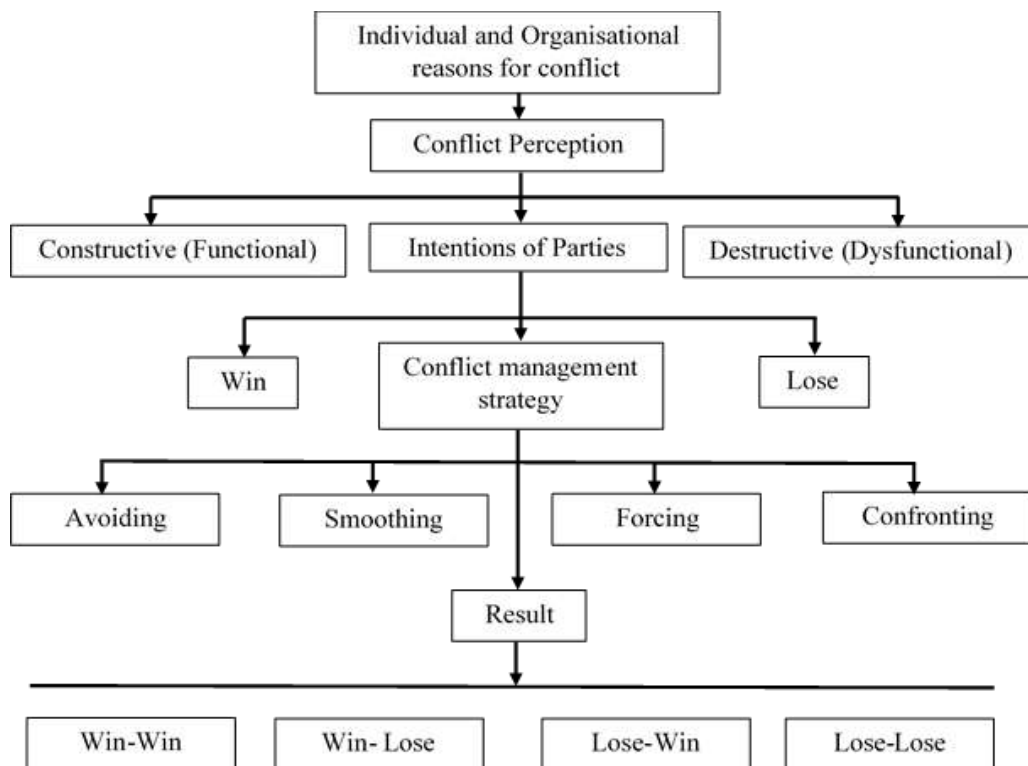


Figure 2.8: Conflict Resolution Model

Source: (Digvijaysinh, 2013)

Subsequent researchers have largely concurred on these, but some have called them by different terms. Each of these methods with other common alternative terms given in brackets is discussed below.

2.5.1.1 Collaborating (Or Confronting, Integrating, Problem-Solving)

Under this approach, the conflicting parties meet face to face to try and work on their incompatibilities and disagreements. According to Digvijaysinh (2013) approach is inclined more toward problem-solving and is less combative. The attitudes of parties in this approach are paramount and should aim at generating the “best” solution in the event the approach is adopted. Both parties should aim to seek a win-win situation by sometimes modifying or discarding their original views (Kerzner & Saladis, 2013). As he suggests, the approach can be used: when conflicting parties can both get at least what they wanted and even more when a common power base can be created when the cost for resolution of the conflict in hand should be reduced when skills are

complementary when a conflict fundamentally involves attacking a common foe when there is trust between conflicting parties when there is enough time for resolving the conflict when there is confidence in the person's ability and when the ultimate objective is to learn. This approach exemplifies a creative active response to conflict.

2.5.1.2 Compromising (or Negotiating)

Basically, compromising essentially is bargaining or seeking concessions with a give and take position so that the conflicting parties leave with some degree of satisfaction. As suggested by Serpella et al. (2014) compromising is at the times an outcome of the confrontation. The theory suggests this mode to be used when: no outright winner or loser can emerge, maintaining a relationship between conflicting parties is important, the stakes involved in the conflict are moderate, parties to the conflict are equally strong, sufficient time is available for negotiation to reach an agreement and when parties to the conflict are not sure whether they are right or not with their claims. This approach like collaborating exemplifies a creative active response to conflict.

2.5.1.3 Smoothing (or accommodating, suppression)

This approach mainly attempts to reduce the emotions and upsurge of feelings that exist in a conflict by putting stress on areas of agreement, strong points, and areas of commonalities and de-emphasis or even suppressing any differences in viewpoints among conflicting parties (Kikwasi, 2012). An example of smoothing would be to tell someone; "we have agreed on three of the five points and there is no reason why we cannot agree on the last two points." Smoothing does not necessarily resolve a conflict but tries to convince both parties to remain at the bargaining table because a solution is possible. In smoothing one may sacrifice one's own goals to satisfy the needs of the other party (Kerzner, 2009).

The theory suggests this mode be used when: an overarching goal needs to be reached, there is a need to create an obligation for a trade-off at a later date, there are low stakes involved in the conflict, liability is limited, to maintain harmony among the conflicting parties, any solution is adequate, creation of goodwill among conflicting parties is important, there is a high possibility of losing the claim at stake in the conflict and

when there is need to gain more time. Indeed this approach has some features of a passive response to conflict because under this approach some problems are left unresolved.

2.5.1.4 Avoiding (or withdrawing, denial)

This approach is often regarded as a temporary solution to a problem (Serpella et al., 2014). The problem and the resulting conflict can come up again and again. Some people view avoiding as cowardice and an unwillingness to be responsive to a situation (Kerzner, 2009). The theory suggests this mode to be used when: there is the possibility of winning, the stakes are low, the stakes are high but one is not ready yet to pursue them, when one wants to gain time, to unnerve one's opponent, to preserve neutrality or reputation, when one thinks the problem will go away or may win by delaying.

2.5.1.5 Forcing (or Competing, Being Uncooperative, Assertive, Power)

This approach happens when one party tries to impose the solution at expense of the other party. This leads to a win-lose situation. Serpella et al. (2014) asserts that conflict resolution works best when a resolution is achieved at the lowest possible levels. The higher up the conflict goes, the greater the tendency for the conflict to be forced with the result being a "win-lose" situation in which one party wins at the expense of the other. The theory, according to Kerzner (2009) suggests this mode to be used when: exists a do-or-die situation, there is a certainty that you are right, stakes involved in the conflict are high, important principles are at stake, one part of the conflict is stronger than the other, a party to the conflict wants to gain power or status, the conflict is on short term deals, maintenance of the relationship is not important, it is understood that a game is being played and when a quick decision has to be made.

An avoiding approach may intensify the conflict in the future as it is neglected and left unresolved. A smoothing approach may have similar consequences although the conflicting parties are less resentful as there is an inherent emphasis on identifying some common grounds in resolving the conflict. A forcing approach always leads to a win-lose situation thereby generating feelings of resentment among conflicting parties regardless of whether they come out as winners or losers (Digvijaysinh, 2013). It is

advised that before using this approach, one should always assess the probable effects on the team members and all the parties involved. The compromising approach can generate resolutions that satisfy to some degree both conflicting parties, but most probably may not be the optimal ones. It would be too risky to use this approach to handle for instance disagreements over quality or technical performance issues in construction projects. The collaboration approach was found to be the most effective solution for handling conflicts (Zakaria & Lazim, 2018). Under this approach, the conflicting parties set out with a positive frame of mind in search of what is the best course of action to take.

Each of the above five modes can be characterized by two scales; assertiveness and cooperation. The Thomas-Kilmann Conflict Mode Instrument (TKI) developed by Keneth W. Thomas and Ralph H. Kilmann is a conflict style inventory that measures an individual's response to a conflict situation and a widely used to determine the appropriate conflict mode to be used. This is demonstrated on Figure 2.9.

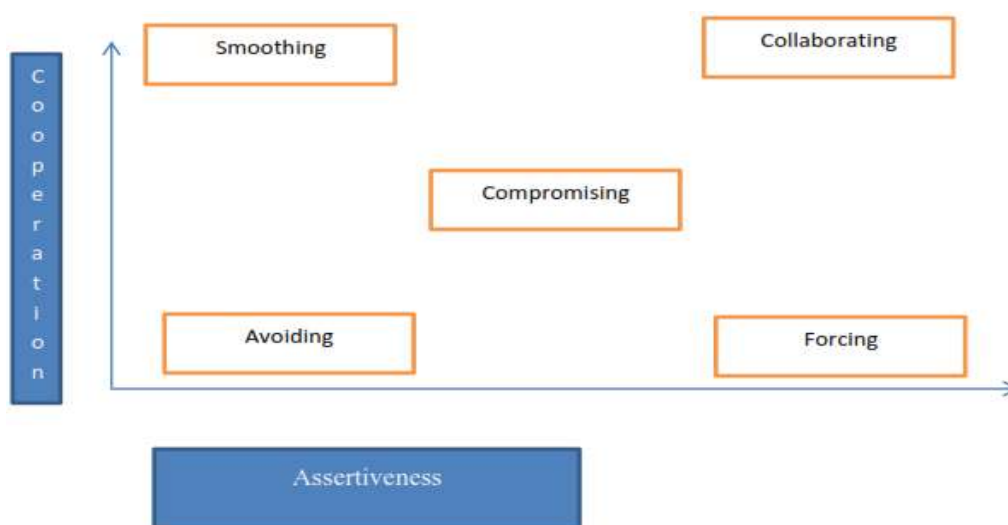


Figure 2.9: Thomas-Kilmann Conflict Mode Instrument (TKI)

Source: (<http://www.cpp-db.com>)

The instrument as shown in Figure 2.9, the avoiding mode is low assertiveness and low cooperation as the person simply withdraws and refuses to deal with the conflict.

The forcing mode is high assertiveness and low cooperation as the party places great emphasis on his or her concerns and ignores those of others. The compromising mode is moderate assertiveness and moderate cooperation as both parties give up some and split the difference to reach an agreement. The smoothing mode is high cooperation and low assertiveness, one of the parties gives in to the other at the cost of his or her own concerns. The collaborating mode is high assertiveness and high cooperation, under this style the attempt is to have a solution that will meet the needs of all parties in conflict. However as contended by Brandt and Murphy (2000) in the management of conflicts, it is important to recognize one's predominant conflict management style because it influences how the conflict will be managed.

Conflict resolution approaches are preferred based on the nature of the conflict, as per Ntiyakunze (2011). Table 2.4 lists the preferred conflict areas for each approach, from the most frequently used to the least used, based on the outcome of the conflict.

Table 2.4: Conflict Resolution Approaches and Their Preferred Areas of Conflict

Conflict resolution approach	Preferred area of conflict
Collaboration	Conflict areas where conflicting parties can both get at least what they wanted and even more, where cost for resolution of conflict in hand should be reduced, where skills are complementary, where a conflict fundamentally involves attacking a common foe, where there is trust between conflicting parties, and where there is enough time for resolving the conflict
Compromising	Conflict areas where an integrative solution is too important, where objective is to learn, to gain commitment by incorporating concerns into a consensus and to work through feelings that have inferred with a relationship
Smoothing	Conflict areas where maintaining the relationship outweighs other considerations, where suggestions/changes are not important to the accommodator, where time is limited or where harmony and stability are valued
Forcing	Conflict areas where quick decisive action is vital; on important issues where unpopular actions need implementing example. Cost cutting
Avoiding	Conflict areas where there is little chance of satisfying your wants, for instance interpersonal conflicts which do not directly relate to the construction project, where disruption outweighs the benefit of conflict resolution, where gathering information is more important than an immediate decision, where others can more effectively resolve the conflict and where time constraints demand a delay.

Source: (Ntiyakunze, 2011)

2.5.2 Delay Management and Conflicts

Project delays are a global threat to contemporary construction. The body of knowledge contains limited empirically-based guidelines on how to handle construction delays. Delay, as used in construction, refers to a protracted time of construction and interruptions caused by events that break the construction schedule (Fashina et al., 2020). This means an activity occurs later than anticipated, stipulated in a contract, or after the date agreed upon by the parties for the completion of a project.

Projects should ideally run consistently, with no delays or conflicts. However, a construction delay entails more than just re-planning and rescheduling. More than the inconvenience of going over the original plan and laying out countermeasures. Several scholars, including Talukhaba (1999), Kikwasi (2012), Indhu and Ajai (2014), Muhwezi et al. (2014), Adebayo et al. (2021) have identified delays as a significant contributor to dysfunctional conflicts in construction projects. According to previous studies in Chile, both owners and contractors do not consistently employ risk management strategies, negatively impacting project performance. Clients, consultants, and contractors should eliminate or minimize delays in their respective roles (Kikwasi, 2012). Figure 2.10 lists the types of delays and their causes according to (Gardezi et al., 2014).

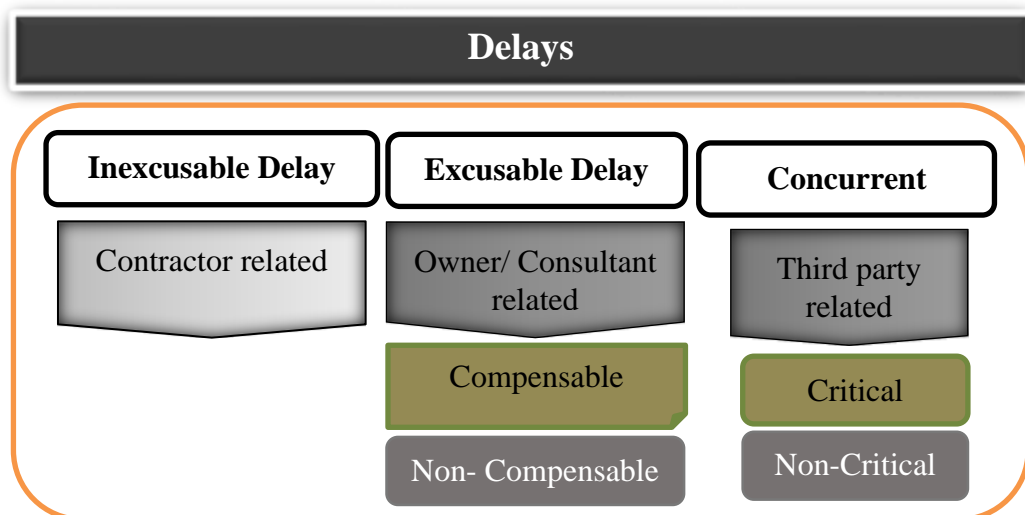


Figure 2.10: Types of project delays

Source: (Gardezi et al., 2014)

Research by Muhwezi et al. (2014), Sha et al. (2017), and Adebayo et al. (2021) agree that delay conflict is the most prevalent, costly, and noxious uncertainty inherent in both public and private sector of construction, resulting in adverse effects on the construction implementation process, some of which include total abandonment of the project, and in other cases, litigations and lawsuits. Figure 2.11 shows the findings of research by Sha et al. (2017) on the effects of project delays in construction projects.

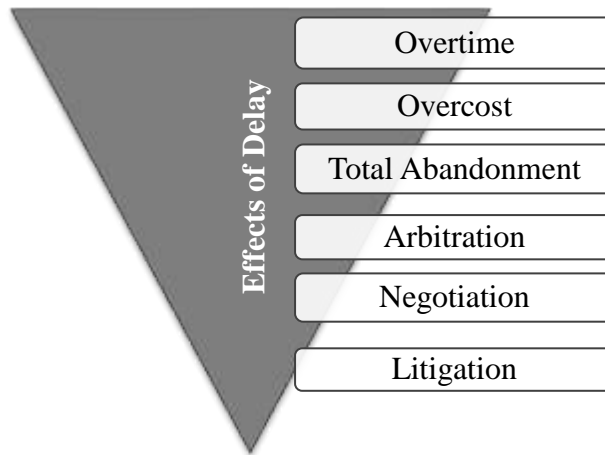


Figure 2.11: Effects of Project Delays in Construction Projects

Source: (Sha et al., 2017)

2.5.3 Communication Plan and Conflict Management

Communication is described as the flow of information from one location to another with the anticipation of producing a desired outcome. Effective communication during project implementation is important for the success of a project. The basic principles of effective communication according to Touitou (2020) are;

- i. **Completeness:** Communication must be precise for the message to be effective. All information required to generate the full effect of the message should be presented. In graphical communication, for example, all charts, graphs, and diagrams must be correctly and completely labeled.
- ii. **Clarity:** The message should be communicated clearly. Complicated word use that distorts the meaning should be avoided. Grammatical expressions must be carefully developed to convey the intended meanings.
- iii. **Consideration:** The audience's demands and desires must be acknowledged before communication can be effective.
- iv. **Conciseness:** Brevity must be maintained without losing comprehensiveness and decency. The language chosen must be precise and to the point. The definition of words must be brief and accurate.

- v. **Courtesy:** This implies courtesy and respect. It involves avoiding hurtful and demeaning statements, apologizing for wrongdoing, and using appreciative language.
- vi. **Concreteness:** This means being explicit and distinct rather than using ambiguous or vague language.
- vii. **Correctness:** Communication is stated to be accurate when the message/information is comprehensive, brief, clear, concrete, involves courtesy, and considers the recipient, and correctness also has to do with the message's accuracy. It's a culmination of all the other six traits.

Several researchers including Aula & Siira (2010), Ntiyakunze (2011), Tipili et al. (2014), and Touitou (2020) have quoted the breakdown of communication as one of the major causes of conflicts. According to Aula & Siira (2010), communication is the aspect with which we are most concerned in understanding conflict management. Communication Management Systems (CMS), possess a conventional, mechanical perspective of human communication. The foundation of this point of view is the information theory by Bowman & Targowski in 1987. Despite its undeniable importance in the study of communication, the model is reductionistic and sender-centered by nature, and may be described as a direct descendant of the so-called linear primary paradigm of human communication; where $A \rightarrow B = X$ or in other words, A communicates something to B, resulting in X. Conflict, according to the linear approach to communication, is a break from harmony and normalcy. Conflict is said to be a result - or at the very least indication - of a halt, breakdown, mistake, or worsening in communication (Ruben 1978: 205 as cited in Aula & Siira, 2010)

During a project undertaking, communication can take three different forms depending on who is communicating (Tipili et al., 2014). The first form of direction is upward communication, where one's own organization or the customer's organization communicates with management, as demonstrated in Figure 2.12 below. The arrows indicate the direction of communication channel. Lateral communication occurs with both consumers and within project teams. A clear communication plan is required for further communication, either downward communication (from superior to

subordinate), horizontal communication (between co-workers), or upward communication (from subordinates to superiors) (Tipili et al., 2014).

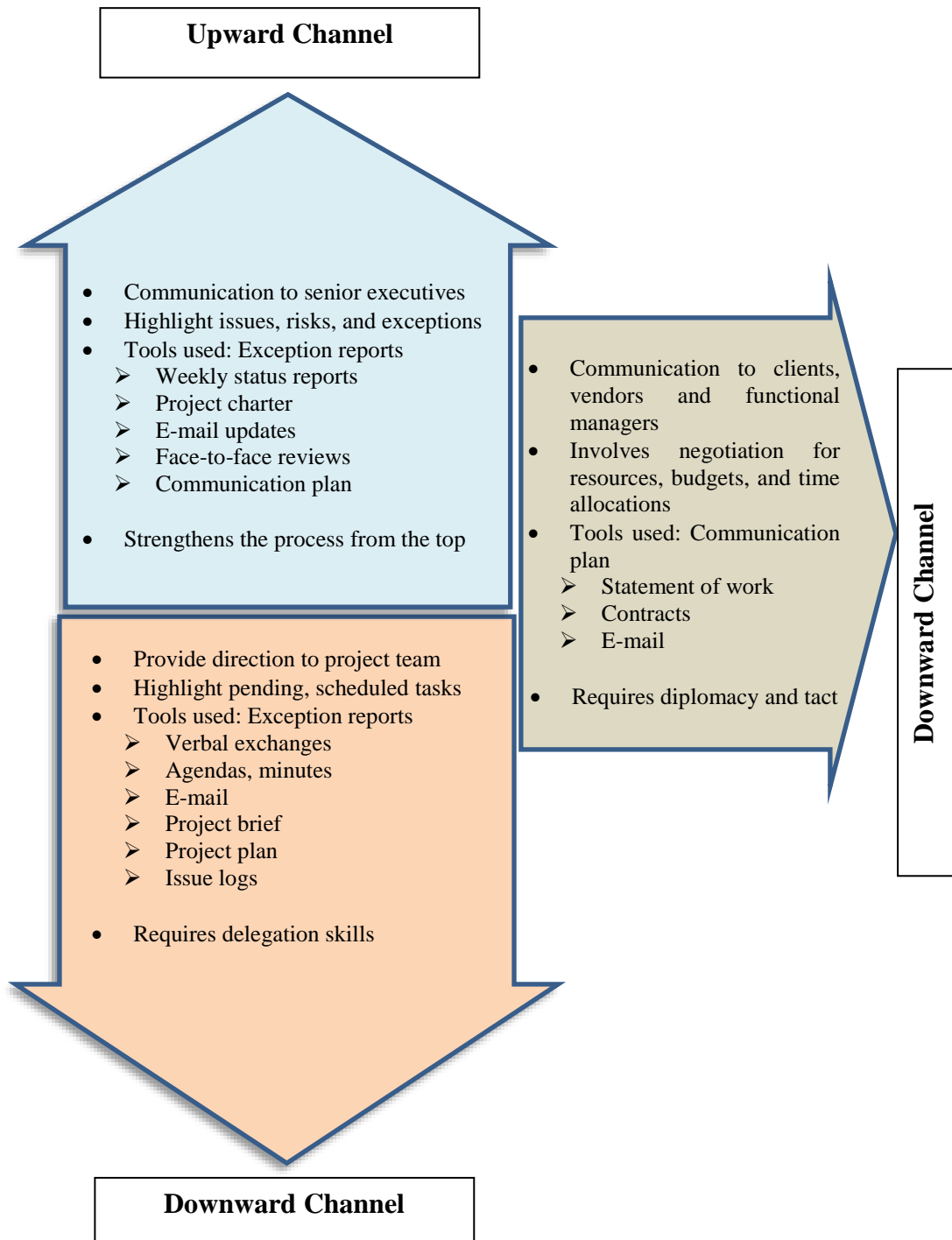


Figure 2.12: The Three Communication Channels of the Project Manager

Source: (Adopted from Tipili et al. 2014)

2.5.4 Project Environmental Dynamics

Project environment refers to anything outside the boundaries of the project organization system (Kivaa, 2000). The construction project environment is characterized by dynamic, uncertain but predictable: social-cultural, economic, political, physical, and aesthetic. Some of the causes of conflict. According to several authors including Yiu & Cheung (2007), Ntiyakunze (2011), and Li et al. (2012), some of the conflicts that can be managed through the right choice of project environment suitability are conflicts due to; mismatch of perceptions and expectations, team members diversity in culture and value, personality clashes among others, as established by several authors

2.5.5 Conflict Management and Team Partnering Orientation

Partnering refers to a process to encourage good working relationships through a formal strategy based on commitment, trust, and communication. The choice of partnering orientation determines to a large extent the project value and efficiency of the process, by having good relationships among parties involved which involves dedication to mutual objectives, and teamwork. Without trust, teams lack the basis for open, mutual learning, communication, and real integration. Mutual trust breeds the reliability and integrity of the partners (Chan & Chan, 2004). Their research identified ten key conflict areas that partnering tends to mend namely; relationship problems, distrust, failure of sharing risk, culture barriers, uneven activity, communication problems, lack of continuous improvement, Inefficient problem-solving, inadequate training, and dishonorable relationship. Although partnering is one of the methods that can improve the better relationship of project stakeholders during construction, an investigation by the Systems Engineering Process Office (1997) indicates that the consequences of any conflicts in partnering can be a big threat to the project objectives.

2.5.6 Construction Project Managers' Expertise and Conflict

Conflicts are inherent in project management. While many people generate fresh ideas to the table, they are also caught up in conflicts, confrontations, personal concerns, and cultural differences. As project managers, you have the authority to prevent conflicts

from escalating to the point that the entire project suffers. Several authors among them Yiu and Cheung (2007), Ntiyakunze (2011), Li et al. (2012), Tipili et al. (2014) established the following as conflicts that can be managed through an effective project management strategy; conflicts due to unclear task expectations, conflicts due to poor leadership, lack of communication, varied working styles, personality conflicts, conflicts over budget, and conflicts arising out of project scope creep. To resolve conflicts in project management, project managers can adopt several techniques such as active listening, paying keen attention to the problem, engaging a mediator, constructive criticism, rational and strategic decision-making, and active cooperation, among others. In general, conflict especially in large projects should be controlled throughout the project life cycle in the same way that quality, time, cost, and scope are, due to its negative effect on the project goals. If project managers are well-informed and empowered through technical experience and expertise, conflict can be reduced.

The project manager's tasks include: ensuring that the project objectives are clear planning, organizing, and coordinating the services of the consortium (design team), the contractor, and other parties concerned with the development and marketing of the project. They must therefore possess a combination of unique skills including the ability to ask acute questions, key out unstated assumptions, and proactively (Kartz 1978 as cited in Ntiyakunze (2011)). According to Okaka (2019), the decisions made by a construction project manager have a direct tie to their technical capability and experience handling construction projects and have a great influence on the project performance, and by that virtual, the project harmony potential. This is not limited to their capacity to handle conflicts arising during the construction phase of the project.

In addition, a survey by International Business Machines Corporation (2012) found that the mental process is one of the main factors in which one individual varies from the other, this was directly linked to expertise in psychology. This also relates to construction project managers and the process of project management. Psychology is a discipline that studies human behavior and mental processes with an emphasis on cognition, emotion, and motivation cognition (IBM Corporation, 2012). Through cognition, the construction project manager can think critically and improve decision-

making and problem-solving skill. Apart from their technical and project management skills, knowledge of psychology combined with criminology will assist in the way construction project managers perceive things, handle stress and manage a site with personality diversity with natural aptitude, making them more efficient.

2.5.7 Personality Management and Conflict

A person's personality is their social stimulus value, often defined by other individuals' reactions to their attire, etiquette, appearance, tone, language, and social actions define that person's personality (Anwar et al., 2012). They highlight the importance of managing conflicts and personality management by linking and integrating the two. According to him, human personality is influenced by genes, with a predictability range of fifty to eighty percent. He contended that while personality cannot be completely changed, habits can. In his research, Ntiyakunze (2011) uses words like belonging, imitation, loyalty, recognition, superiority, and status as descriptive of the human elements of sociability.

Many researchers have focused on examining the response to conflict in terms of personality reaction to that conflict. Graziano et al. (1996) in Anwar et al. (2012) argue that responses to conflict and conflict-related behaviors are depended on traits of personalities. In their research, Anwar et al. (2012), integrates personality dimensions from the big five theory with inter-personal conflict among team players. From the model, they identify the big five personality factors which are congruent with self-rating, rating by peers and by psychological staff. These factors encompass Extraversion, reflecting sociability and enthusiasm; Agreeableness, embodying friendliness and kindness; Conscientiousness, indicating organization and a strong work ethic; Neuroticism, encompassing emotional stability and moodiness; and Openness, highlighting imagination and insight.

Extroverts desire to be dominant, forthright, and assertive, which is a strong personality trait in dealing with conflict and developing conflict resolution strategies (Schneer and Chanin, 1987 as cited in Anwar et al., 2012). However, this personality trait is proportional to the intensity of one's anger. Individuals with a conscientious dimension exhibit high levels of performance and job satisfaction in organizations as

they exhibit strong dependability, persistence, organization, discipline, method, diligence, risk aversion, accomplishment orientation, and purpose (Anwar et al., 2012). Neuroticism refers to personality traits that characterize people as tranquil, sad, insecure, emotionally disturbed, cynicism, anxious, and hedonistic (Robbins et al., 2008 as cited in Anwar et al., 2012). This personality type avoids management jobs and always has a small social network. Figure 2.13 provides an overview of the relationship between the different personality traits and conflicts.

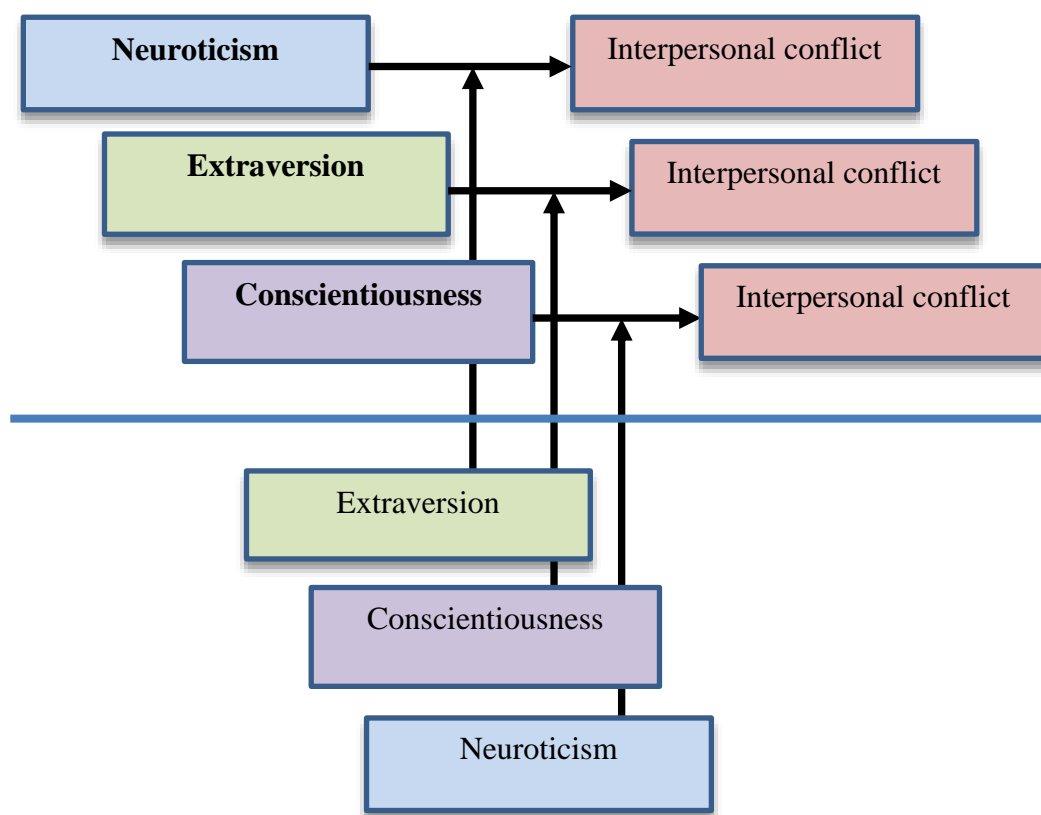


Figure 2.13: Relationship between the Different Personality Traits and Conflicts

Source: (Adapted from Anwar et al., 2012)

2.6 Related Theories

This section cites theories and concepts that are found to be relevant to the study. The intention is to come up with a theoretical framework with relevant variables for analyzing the interactions taking place in a building project.

2.6.1 Transactional Analysis Theory

Conflict is an inevitable aspect of human interaction, occurring at various levels, from interpersonal relationships to global politics. Transactional Analysis (TA) theory, developed by Eric Berne, a Canadian psychiatrist and psychoanalyst, during the 1960s, provides an extensive structure for examining conflict dynamics through individual transactions. Berne defined the fundamental unit of social interaction as a transaction. He was influenced by empiricism, phenomenology, existentialism, and humanism. When two people converse, the individual who initiates the communication provides the 'transaction stimulus,' and the person who responds to this stimulus is giving the 'transaction reaction.' Transactional analysis is utilized to examine the process of transactions in communicating with others. We need to be conscious of our emotions, thoughts, and behaviors during our encounters with others.

The core of Transactional Analysis theory is the notion of ego states that human personality is made up, which consist of Parent, Adult, and Child states, reflecting acquired patterns of cognition, emotion, and behavior. Transactions, which are interactions between various ego states, are the foundation of interpersonal communication. Berne also established the concept of life scripts, which are subconscious behavior patterns acquired throughout infancy that influence how individuals react to various events across their lifetimes. Transactional analysts are competent in identifying individuals' ego states during interactions and can intervene and improve the quality and efficacy of communication by following transactional sequences.

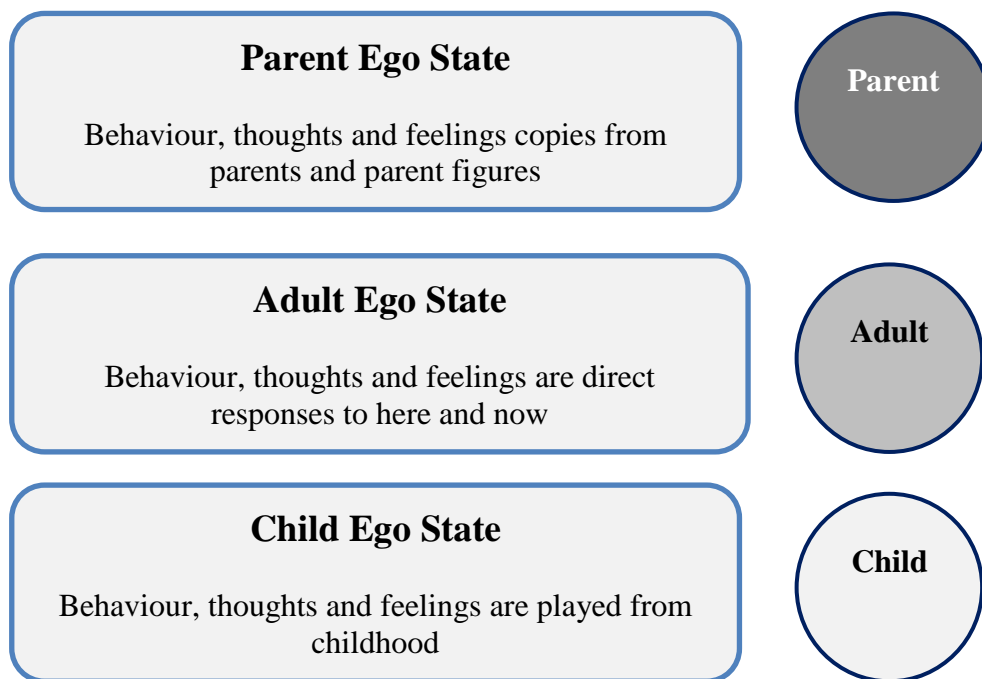


Figure 2.14: Relationship between the Different Ego States in TA Theory

Source: (Adapted from Singh & Singh, 2017)

Transactional Analysis theory's champions are those individuals who are conscious of their ego states and are proficient at navigating transactions to achieve achievements. They are able act responsibly and examine things logically because they have a healthy adult ego state (Singh & Singh, 2017). Moreover, heroes identify and counter destructive life narratives, promoting individual development and positive conflict resolution. Conversely, the antagonists of TA theory are those who are stuck in dysfunctional ego states; they might appear as strict adult behaviors, manipulating Child behaviors, or critical Parent behaviors. These people frequently prolong conflicts by participating in counterproductive exchanges marked by defensiveness, irrationality, and placing blame. Adherence to unfavorable life scripts also intensifies conflict and results in damaging behavior patterns that repeat.

The Theory of Attachment (TA) theory is a powerful tool for conflict resolution. It focuses on three key concepts: ego states, transactions, and life scripts. Ego states help individuals understand their own and others' behavioral patterns, promoting empathy and understanding in conflict situations. Transactions reveal the dynamics of

communication within conflicts, allowing individuals to identify communication breakdowns and adjust their responses. Life scripts, influenced by past experiences, help individuals break free from destructive patterns and adopt more adaptive responses. TA therapy techniques, like script analysis and redecision therapy, offer practical tools for personal growth and conflict resolution.

2.6.2 The structural theory of conflicts

The structural theory attempts to explain conflict as a product of the tension that arises when groups compete for scarce resources. The central argument in this sociological theory is that conflict is built into the particular ways societies are structured or organized. It describes the condition of society and how such conditions or environments can create conflict. Structural conflict theory identifies such conditions as social exclusion, deprivation, class inequalities, injustice, political marginalization, gender imbalances, racial segregation, economic exploitation, and the like, all of which often lead to conflict (Kowner, 2009). With structuralists building their theories on their observations of societies, a common theme that the structure of society results in conflict prevails in the theories.

The theorists saw conflict and observed that conflict occurred among groups and that groups have structures that define the groups. These theorists maintain that conflict occurs because of the exploitative and unjust nature of human societies or because of the domination of one class by another. The theory is however deficient in its one-sidedness of looking at causes of conflict. It, for instance, does not see the bright sides of racial or ethnic diversity and the strength that society may derive from pluralism. It only sees the flaws. The structural theory thus makes sense only when conflicts are viewed from the broadest possible perspective, and only if the observer opts to ignore alternate causes of the conflict. Construction projects in nature form a society of individuals and groups that may fall into different classes and hierarchies, and with different cultural and ethnic beliefs, resulting in flaws and potential areas for conflicts to arise.

2.6.3 Maslow's Hierarchy of Needs

Maslow's hierarchy of needs is a theory in psychology proposed by Abraham Maslow in his 1943 paper "A Theory of Human Motivation" in *Psychological Review*, a motivation theory that is expressed graphically as a pyramid (Kerzner & Saladis, 2013). Maslow's Hierarchy of Needs provides an insightful framework for understanding conflicts by focusing on the needs and motives of the individuals involved. This theory has been widely used to analyze the underlying dynamics and motivations of conflicts in a variety of domains, including conflict resolution. As each motivating factor is achieved it is no longer a motivator as the person now seeks the next level. The levels are physiological needs (food, water, shelter, sleep), safety and security (physical, financial, and health), social connection and belonging (marginalized communities seeking acceptance and inclusion), self-esteem needs (recognition, respect, and dignity), and self-actualization (creative expression, intellectual pursuits, spiritual fulfilment).

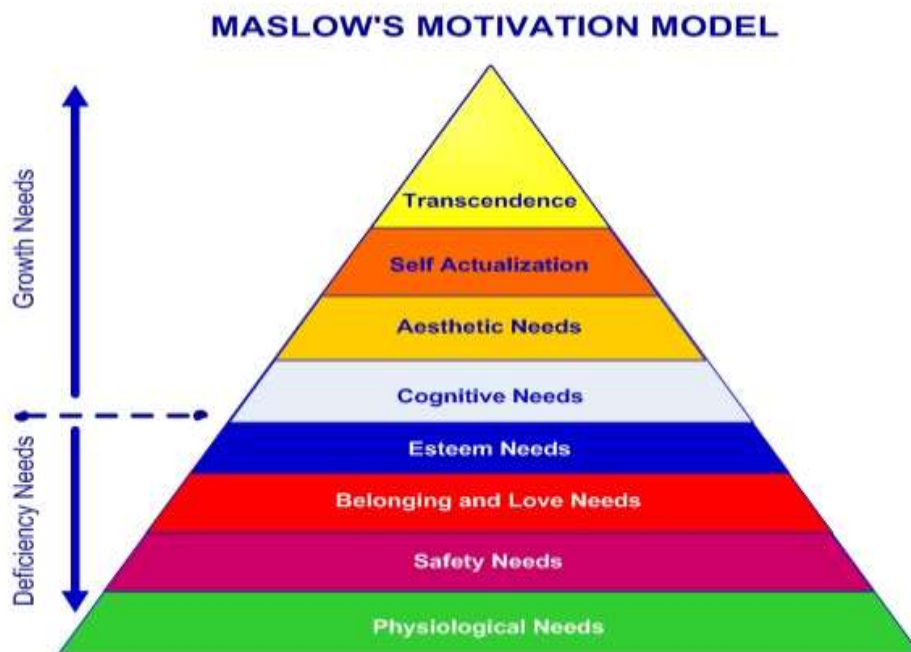


Figure 2.15: Maslow Motivation Hierarchy of Needs

Source: (Kerzner & Saladis, 2013)

In conflict situations, the champions for this theory include those struggling to access these necessities, while antagonists include oppressive regimes, armed groups, or environmental factors. Conflict resolution efforts should focus on providing humanitarian aid, establishing security measures, promoting dialogue and reconciliation, and supporting initiatives that enable individuals to pursue self-actualization. While there is no best way to motivate, it is clear that managers should carefully assess the characteristics of their organizations before deciding on the most appropriate combinations of approaches, with an increased understanding of human behavior and therefore the ability to motivate employees thus affecting team productivity.

2.6.4 Herzberg's Theory

This theory was developed by Frederick Herzberg, a behavioral scientist in 1959. According to Herzberg, some job factors result in satisfaction while other job factors prevent dissatisfaction. According to Herzberg, the opposite of “Satisfaction” is “No satisfaction” and the opposite of “Dissatisfaction” is “No Dissatisfaction”. In this motivation theory, the manager must address hygienic factors such as working conditions, relationships, level of supervision, and compensation before attempting motivation which consequently affects team productivity. Kerzner and Saladis (2013) say that if these factors are not managed and provided at a satisfactory level they may cause pain, discomfort, or conflict. They are not motivators but must be managed to remove any potential dissatisfaction among employees. Once the hygiene factors are satisfied, motivating factors can be introduced. Examples of motivators are personal growth, advancement, increased responsibility, challenging work, and recognition.

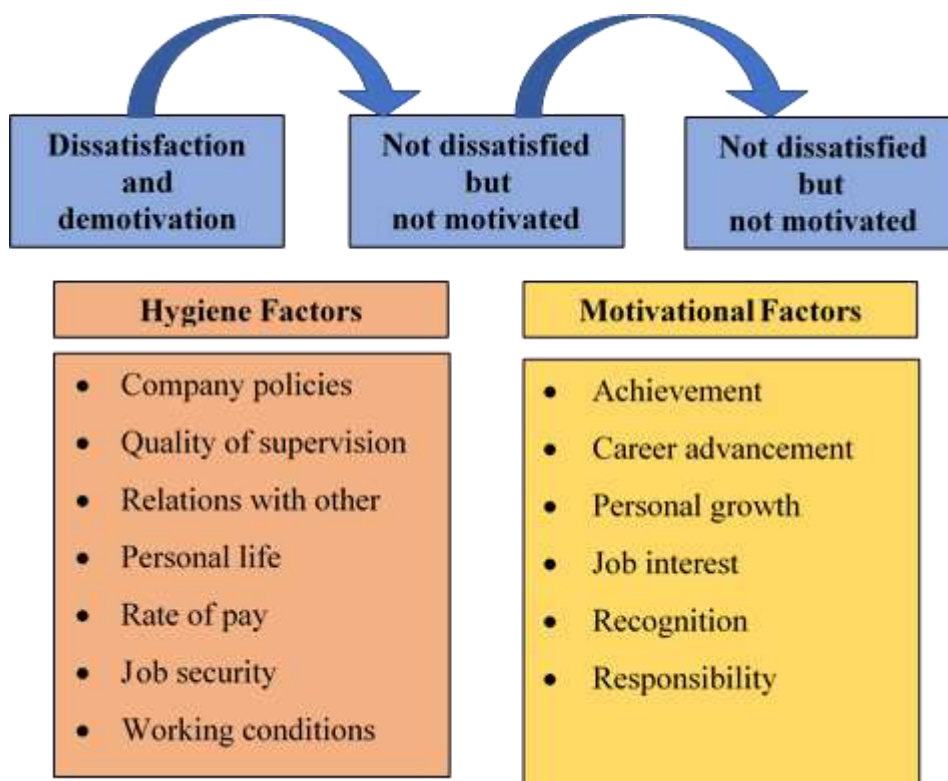


Figure 2.16: Herzberg's Theory of Motivation Hygiene and Motivational Factors

Source: (Adapted from Kerzner and Saladis, 2013)

2.7 Literature Gap

The existing literature on conflict management in construction projects provides valuable insights into various aspects of conflicts, their causes, and management strategies. Understanding the critical causes of conflicts in construction projects, as highlighted by among others, Ullah (2023), Adebayo et al. (2021), Ejohwomu et al. (2016) Kingsley (2015), Femi (2014), Agwu (2013) and Celik (2013) could provide valuable insights into developinhg effective conflict management strategies. Studies such as Alaloul et al. (2019), Zakaria & Lazim (2018), Soni et al. (2017), Vaux (2014), and Jaffar et al. (2011) have highlighted the negative impact of conflicts on project performance and the importance of addressing stakeholder concerns to enhance the success of major infrastructure projects, emphasizing the need for a focused investigation into effective conflict management strategies tailored to the Kenyan

construction environment. Although there exist several studies in the subject area of conflict management, such as Mbwanga (2021), Kituku (2015), and Hilda (2014), these studies feature in other sectors of production, leaving a gap in comprehensive understanding specifically tailored to the intricacies of conflict management strategies bearing in mind the unique nature of the construction industry.

While studies like those by Zitulele (2021), Ejohwomu et al. (2016) Kingsley (2015), Li et al. (2012), Ntiyakunze (2011), Acharya et al. (2006) and Vaaland and Håkansson (2003) touch on conflict management in construction projects in different regions, there is a lack of research focusing on in-depth exploration into the unique practices and challenges of conflict management within Kenyan construction industry. Appendix iv tabulates the key study findings from previous studies and the knowledge gap established from the various studies. Understanding the unique cultural, social, and economic factors at play in Kenya could provide valuable insights into effective conflict management strategies tailored to the local context. Therefore, the research gap lies in the need for a comprehensive investigation into the practices, challenges, and impact of conflict management in construction projects in Kenya, with a specific focus on developing tailored conflict resolution strategies to improve project performance and outcomes in the local construction sector. The study could explore the role of stakeholders, cultural influences, legal frameworks, and communication practices in managing conflicts within construction projects in Kenya not only to enhance the understanding of conflict management in the Kenyan context but also provide practical recommendations for industry practitioners and policymakers to improve project outcomes.

2.8 Theoretical Framework

Conflict management in construction projects is duty bound for the sake of increasing project performance because the result of such action will result in good communication, time management, good cooperation, and increased organizational performance. A good conflict management approach will improve decision outcomes, especially on task-related conflict and group productivity by increasing the quality

through constructive criticism since most task-related conflicts allow the exchange of ideas and assist better performance among the workforce.

Conflict management theories suggest that a healthy system should integrate internal sub-systems with higher organizational hierarchy levels. Ford (2017) proposes a four-way process for conflict management, including assessment, inquiry, design, implementation, and evaluation. Walker (1996) argues that a system is composed of individual elements connected, and for optimal functioning, these elements must work together. Construction projects, like systems, involve diverse participants with varied backgrounds, making conflicts inevitable. Transactional Analysis theory helps understand interpersonal interactions and communication patterns in construction project teams, while Structural Theory of Conflicts identifies systemic issues like power imbalances and resource allocation. Other theories emphasize individual needs for motivation, well-being, fostering a positive team culture, and ensuring adequate working conditions, fair compensation, and opportunities for recognition and growth. Figure 3.17 demonstrates the interrelationship between these theories in bid to improve team productivity and manage conflicts. These theories provide valuable insights into conflict management by addressing various dimensions of human behavior, organizational dynamics, and motivational factors. Newell (2008) suggests that encouragement and constructive criticism can improve project performance. Kerzner and Saladis (2013) assert that team productivity can be improved by responding early to mitigate potential dissatisfaction and enabling a good working environment.

The success and harmony in the building process depend, to a large extent, on how the project participants work together. This greatly depends upon the project team members working collectively as a unit, perceiving the same goal and objectives, and understanding that what one achieves translates to the achievement of them all as a unit. It is this view of collective actions and interrelationship of the components of the project organization that makes the theoretical framework appropriate for analysis and explaining relational conflicts occurring in building projects. The study Theoretical Framework is presented in the Figure 2.17 below. As demonstrated in the figure, these theories take into account the many interpersonal, structural, individual, and organizational elements that impact conflict resolution. They help in

understanding communication patterns, conflict resolution strategies, and the role of social structures in shaping disputes.

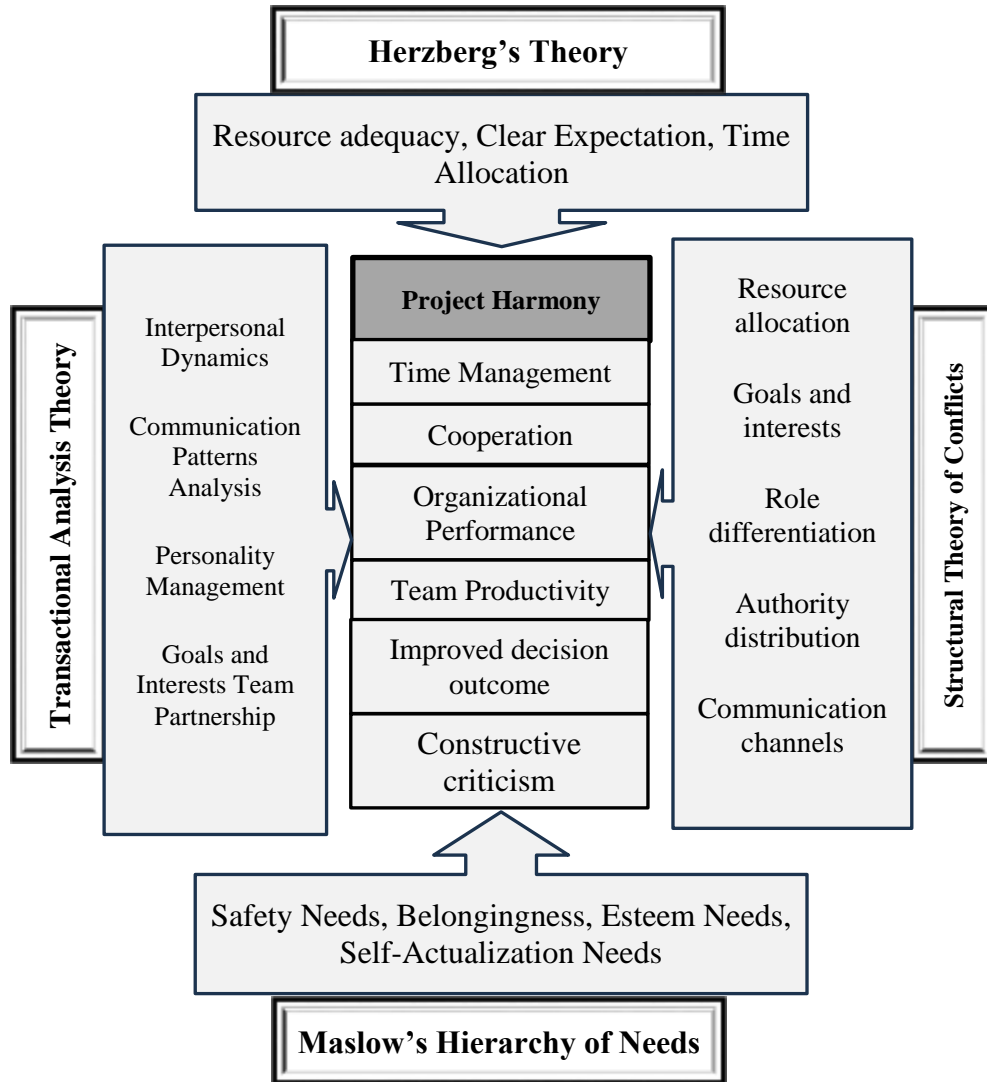


Figure 2.17: Theoretical Framework

Source: (Author 2020)

2.9 Conceptual Framework

Conceptual frameworks, according to Kothari (2004), are structured from a set of broad ideas and theories that help a researcher to properly identify the problem they

are looking at, frame their questions, and find suitable literature. This study used the conceptual framework (Figure 2.17) to guide the research data collection and analysis.

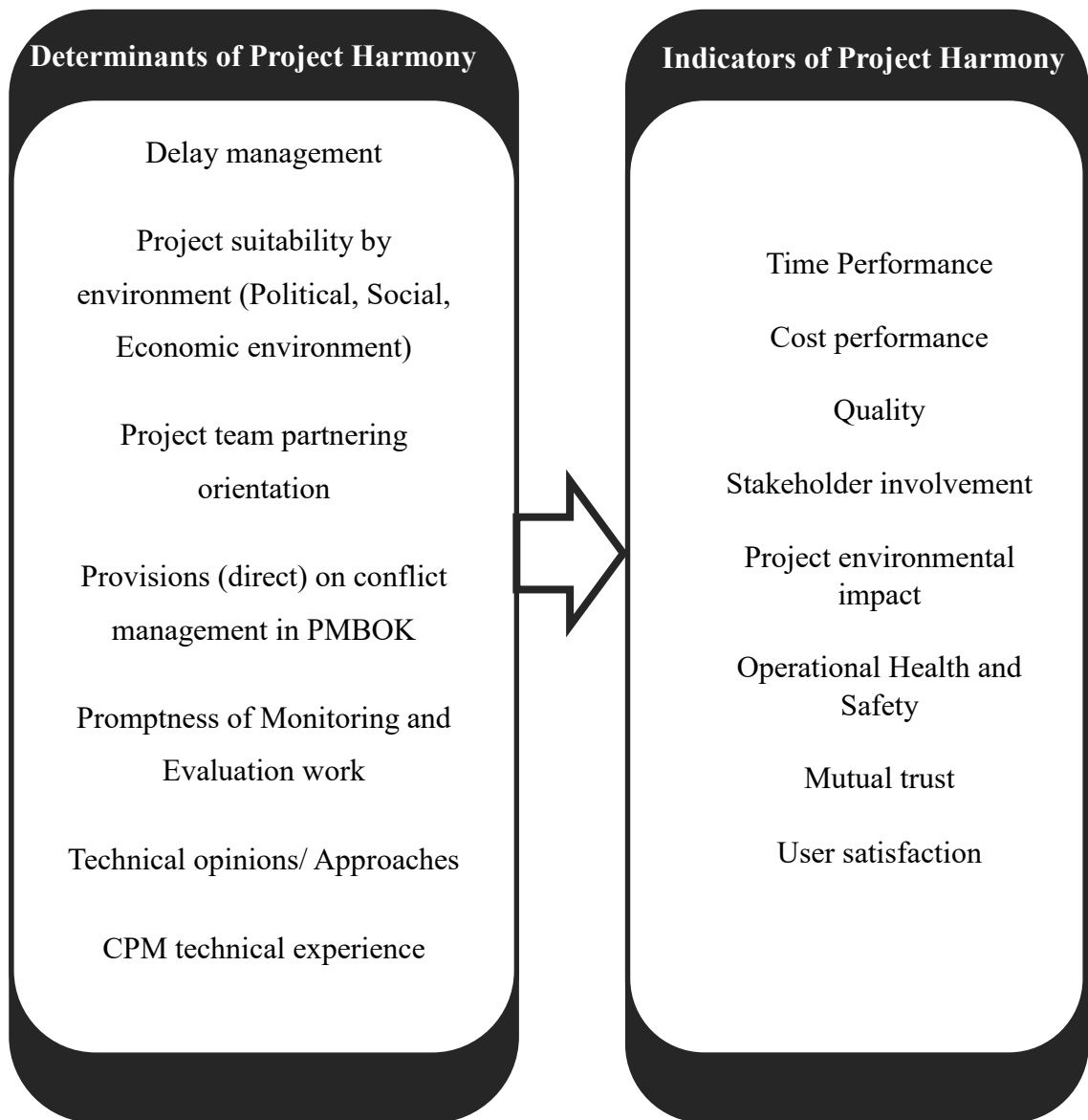


Figure 2.18: Conceptual framework

Source: (Author, 2020)

2.10 Discussion

This study aimed at investigating the practice of conflict management in construction projects in Kenya, for the purpose of enhancing the effectiveness of project delivery

and identify project management practices (performance factors) that are critical for creating project harmony during delivery.

This chapter reviewed literature of key concepts of conflicts, their nature and management approaches. The chapter begins by reviewing the nature of the Construction industry in Kenya inter alia; the characteristics of the industry in general, the regulatory framework used and the key participants in the industry, The chapter then looks at the approach of conflict where it broadens the definition of conflict and its evolvement over time and draws the relationship that exists between conflicts and disputes. The research identifies two major classifications of conflicts comprising relationship or emotional conflicts and the task or cognitive conflicts. Other aspects discussed under the approach to conflicts include functional and dysfunctional conflict phenomenon, conflict in organizations, internal conflicts in the construction industry.

The chapter further reviews sources of conflicts in construction projects as documented by other researchers, and then discusses the influence of conflicts on construction projects followed by a review of the various approaches to conflict management namely; collaborating, compromising, smoothing, avoiding, and forcing. The theoretical framework is modeled from the Transactional Analysis Theory, structural theory of conflicts, Maslow's hierarchy of needs, Herzberg's theories. The conceptual framework is based on the relationship between the independent and dependent variables. The independent variables have been extracted from the study objectives and explained by the theoretical framework.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter described various methods used in the study and the reasons for choosing such methods. The chapter outlines the research strategy, research design, study population, sample size and sampling procedure, variables in the study, and research instruments. It also described how data will be analyzed and the study area.

3.2 Research Strategy

Social science is classified into two broad categories: quantitative research and qualitative research. According to Silverman (1993) in Mutungi (2018), attempting to establish the distinction between the two is problematic.

3.2.1 Quantitative Paradigm

Quantitative research can be construed as a research strategy that emphasizes quantification in the collection and analysis of data. This entails a deductive approach to the relationship between theory and research, in which the accent is placed on the testing of theories, has incorporated the practices and norms of the natural scientific model and positivism in particular; and embodies a view of social reality as an external, objective reality (Bryman, 2012). This kind of research is widely described as investigating people's attitudes, views, habits, and other defined variables- and generalizing findings from a larger sample population. It typically answers the questions such as “what” and “how”. The scale of measurement approach is the key issues which need to be considered while forming a quantitative research. The required data normally are gathered from social surveys, official statistics, experiments, structured observation and content analysis (Sanchez, 1998). This research adopts survey approach through questionnaire administration to target respondents. Random sampling is used in quantitative research to guarantee and representative sample (Mugenda & Mugenda, 2008).

3.2.2 Qualitative Paradigm

Qualitative research is a comprehension inquiry process focused on distinct empirical traditions of investigation that examines a social or human problem, by explaining a specific phenomenon using research instruments such as surveys, interviews, and observations (Sanchez, 1998). According to Mugenda and Mugenda (2008), qualitative research involves designs, strategies, and measures that do not generate discrete numerical data but rather terms that are often categorized. During data collection and analysis, this kind of research place an emphasis on word rather than quantitative statistics (Bryman, 2012). The same authors contend that the approach employs different strategies of enquiry and methods of data collection and analysis. Some of the strategies include; ethnographies, grounded theory, phenomenology, narrative and case study research. Qualitative methodologies are usually descriptive or explanatory in design, with the ultimate goal of answering "how?" and "why?" questions, and aims to develop themes from data collected (Creswell, 2003).

3.2.3 Adopted Research Strategy

In this study, the researcher stated the problem and established research objectives. The researcher then outlined the target population, selected the research site, collected and analyzed data and presented the findings, drawing conclusions and recommendations. Even though the same approach may be used in both quantitative and qualitative strategies, differences can be found in data collection techniques, kind of data collected, methods of data analysis, and interpretation of the findings (Mugenda & Mugenda, 2008).

This research is quantitative because of the following reasons: (i) the method of data collection used was survey, (ii) collected data in numeric form, (iii) data collected was mainly analyzed statistically, (iv) it addresses questions such as “*how much*” and “*how many?*”, (v) provides a strong basis for explaining phenomenon, (vi) identifies variables which are significant, (vii) random sampling was used to identify the respondents, (viii) based on meanings derived from numbers.

This research is qualitative because of the following reasons: (i) part of data collected was in form of words (ii) data collected was partly analyzed qualitatively (textual analysis), (iii) it addresses questions such as “*how*” and “*why?*” (iv) it develops themes from collected data.

Although this study integrates elements of qualitative research strategy during data analysis, quantitative research strategy predominates since the primary purpose of the research was to investigate by how much the influencing factors of project harmony explain the project harmony potential level and develop a statistical model with the statistically significant factors.

3.3 Research Design

This research focused on the understanding of conflict management situations in construction projects in Kenya. Based on the argument raised by Creswell (2003) and Bryman (2012), this study can be classified as survey research design. Since the research collected both quantitative and qualitative data on multiple variables at the same time in order to provide answers to the research questions and control variables. Survey research incorporates a cross-sectional design in which data are collected mainly by questionnaire or structured interview at a single point in time with the aim to collect a body of quantitative or quantifiable data in relation to the variables, which is then analyzed to identify patterns of interaction or association (Bryman, 2012). With this consideration, a cross-sectional survey was adopted for the study. The researcher used questionnaires to seek the opinions and actual information from the target population. Data obtained was both quantitative and qualitative and was analyzed qualitatively and quantitatively where applicable.

3.4 Population and Sample

3.4.1 Target Population and Sample Size

Population is defined as an entire group of individuals, events, or things of interest that researchers wish to investigate (Mugenda & Mugenda, 2008). Guided by research objectives and questions, the unit of analysis considered appropriate for this study was

the building project. Yin (2003) defines the unit of analysis as the entity the researcher wishes to discern at the end of the study, typically, the main focus of the study questions.

The target population consisted of registered consultants and registered contractors who fall in NCA1 to NCA 5 categories. These were deemed influential in project delivery since they are the people with the road map to construction project harmony hence their ability to produce useful and varied information on the practice of conflict management in construction projects in Kenya. This is because they own adequate knowledge of project construction and their experience in project performance was valuable hence their use as the target population.

The study covered both private and public projects of a value between Kenya shillings 500 million to Kenya shillings 35 billion constructed within the time frame of January 2015 and January 2020. According to the NCA register accessed on 16 June 2020 via <http://www.nca.go.ke/index.php/k2/contractors-center/search>, there were 5,625 contractors enlisted for all categories, for all classes of works and operating within the Nairobi region. Out of these, 936 had been registered under the building works class. The total number of contractors in categories NCA1 to NCA5 is 165. Morris (1990) in Kwatsima (2016) suggests the absence of a fixed number of percentages of subjects that determine the size of an adequate sample. Kivaa (2000) asserts that a sample size above 30 cases is considered a practical representative sample. To them, the ideal sample is large enough to serve as an adequate representation of that population about which the study wishes to generalize and small enough to be selected economically in terms of subject availability, expenses in terms of time and money, and complexity of data analysis. The number of each group is as shown in Table 3.1 below

Table 3.1: Target Population

Stratum	Registered (population)
Consulting firms	95
Contracting firms	165
Total	260

Source: NCA, ACEK, and BORAQS (2020)

As seen in appendix iv, three options were considered in sample size calculations. These yielded sample sizes of 385, 55, 155, and 158 respectively. A sample size of 158 respondents was arrived at. This is because two of the formulae produced sample sizes with a difference of three units only (155 and 158). The sample size provided by the formula cited in Kass (2012) was significantly different from the rest and was also considered to be too low to be a representative of the entire population. The population of consulting firms was obtained from the Association of Consulting Engineers of Kenya (ACEK) and the Board of Registration of Architects and Quantity Surveyors (BORAQS) situated in Nairobi.

3.4.2 Sample Procedure

A sample is defined as a segment of the population that is selected for investigation (Bryman, 2012). However, Bryman asserts that there is no such complete formal list that can adequately satisfy a researcher as a sampling frame. This study, used a combination of stratified and simple random sampling to identify the contracting firms to be included in the sample. For the contractors, five strata were formed based on the NCA registration category. Sample sizes for each of the strata were then calculated proportionately, based on the overall sample size. This has been presented on Table 3.2. Once this had been achieved, simple random sampling was then used to pick the contractors to be included in the overall sample from each group.

Table 3.2: Stratified Sampling of Contractors

No.	NCA	Target Pop	Sample Size	Questionnaires administered
1	NCA 1	40	24	24
2	NCA 2	51	31	31
3	NCA 3	41	25	25
4	NCA 4	59	36	36
5	NCA 5	69	42	42
Total		260	158	158

Source: Author (2020)

Purposive sampling was used to identify the consultants to be included in the survey. The criteria for inclusion was participation in similar nature of projects of between

Kenya shillings 100 million to Kenya shillings 35 billion construction cost within the time frame of the past five years. Since the unit of analysis is the building project, this non-probability sampling technique does not by any chance affect the generalization of the results.

3.5 Data Collection Instruments and Procedure

Having established the sample size, it is necessary to establish how to select the respondents out of the sampling frame to make up the 158 construction projects needed. Mugenda and Mugenda (2008) assert that when it is not possible to obtain a sampling frame because the population is either very large or scattered over a large geographical area, cluster sampling is used. The study used primary cross-sectional data obtained from actors in the construction industry working in building consultancy and contractor firms sampled randomly across Nairobi County. Data collection procedure is the process of gathering pieces of information that are necessary for the research process (Mugenda & Mugenda, 2008). In this study, the questionnaire was administered to a total of 158 respondents comprising consulting and contracting firms. Self – administered, structured and standardized questionnaire was used to obtain information from the respondents.

3.5.1 Data Collection Instrument

Data collection procedure is the process of gathering pieces of information that are necessary for the research process (Morris, 1990). The research data was collected mainly using the administration of questionnaires.

a) Questionnaire Survey

A questionnaire has the advantage of increasing the generalization of data while at the same time granting respondents the freedom to express their views (Al-Assaf et al., 1995). The study majorly relied on a Questionnaire survey and aimed at determining the attitudes of key construction project participants on the criticality of conflict management and project harmony potential. For the purpose of this study, the questionnaires were structured in English and given to the selected respondents in the

area of study to express their views. The questionnaires used a combination of both closed and open-ended questions. The open-ended questions were used in instances where more elaborate details were necessary. This was for instance used to collect data on cost and time performance, to tease out challenges, and find out the best alternative strategies to conflict management, which may be person-specific and particular to the participant. The closed-ended questions were very constrictive asking participants to measure issues of conflict on a five Likert scale.

i) Questionnaire Development

The questionnaire was developed considering the factors that influence conflict management in construction projects in Kenya. The questionnaire was structured in three sections for clarity and ease of sorting the collected data, that is; the demography level, Project harmony potential, and Conflict and conflict management.

Section A on the demographic data section was considered relevant so that the respondent's background in terms of specialization and the number of years in practice can be felt because many years in practice translate to more projects handled as well as the experience which is very useful in addressing the research objectives. The other data collected under this section included; role of the respondent in the project, level of education worked in the industry, specialization by training, management level within the firm, type of projects currently undertaking, and the number of similar projects undertaken within a period of past five years.

Section B sought to describe project harmony potential by use of nine indicators namely: cost performance; time performance; quality performance; stakeholder involvement; environmental impact; safety performance; user satisfaction and mutual trust. The measurement of these indicators has been discussed in detail in chapter 3.6 of this study. Section C covered the exploration of the practice of conflict management and its influencing factors. It is in this section where the causes and impacts of dysfunctional conflicts on construction projects, the contribution of conflict management on project cost, time, and quality performance of a project were determined. One open-ended question was provided in the last section to allow the respondents to express their views regarding other best practices and strategies that

can be used in conflict management. This data would be analyzed qualitatively as opposed to all other previous questions which were close-ended and which were to be analyzed quantitatively.

ii) Questionnaire Administration

This study used two types of approach in distributing the questionnaires to the respondents across two phases; distributing the questionnaire to chosen contractors and consultancy firms by email and mobile devices, and by hand delivery and collection, to the respondents. Contact information was first gathered from several sources such as firm websites, yellow pages, Kenya gazette publications, online business directories, and lists of prequalified contractors accessible online. Collected information comprised email addresses, phone numbers, and physical addresses.

The accomplishment of the initial phase was made by distributing a link to the Google form to the email addresses and cell phone numbers of the contractors. 136 companies were asked to participate in the Google study. However, certain email addresses acquired were not accessible and certain cell phone numbers were not registered on WhatsApp™.

The second phase constituted the physical administration of the printed questionnaire to not only contractors and consultant firm whose emails addresses were unreachable or unavailable, but also those who had failed to respond to the google survey. This was achieved by the use of research assistants who distributed the questionnaires to the physical addresses obtained previously. A total of 22 questionnaires were administered.

b) Pilot study

Before actual distributing the questionnaire, a pilot study was conducted by hand delivery and collection only. The basic purpose of the pilot study was to verify the completeness, wording of the questions and the techniques to be employed for the main study in order to ascertain their feasibility, comprehensiveness, and clarity. The pretesting sample comprised of contractors in NCA 1 to NCA 5 categories and

consultants in the built environment, such as architects, construction project managers, quantity surveyors, and civil/structural engineers. There is no standard method for estimating sample size in pilot research.

The researcher distributed a total of 30 questionnaires via google forms. According to Connelly (2008) existing literature suggested that a pilot study sample was 10% of the sample projected for the larger parent study, thus 30 participants were justified in this study. The respondents were also requested to provide feedback on how the questionnaire could be improved. Out of the distributed questionnaires, a total of fourteen (14) were returned, all with adequate data for analysis. The researcher used this data to perform mock data analyses to assess the viability of the chosen statistical tools of analysis. As seen on Table 3.2 below the pilot survey demonstrated a high reliability of the data collection instrument.

Table 3.3: Reliability Test for Factor Categories; Pilot Study

S/N	Factor category	Cronbach's α	Reliability Status
1	Demographic data	.531	Sufficient
2	Project harmony potential	.695	Sufficient
3	Responsibility for conflict management	.885	Good
4	Frequency of conflict resolution amongst selected groups	.706	Good
5	Areas of conflicts	.712	Good
6	Impacts of conflicts	.824	Good
7	Conflict management influencing factors	.722	Good

Source: Author, (2020)

The respondents provided some feedback on the questionnaire. Table 3.3 below summarizes the comments and how they were addressed.

Table 3.4: Comments from the Pilot Study

No.	Comment	Remarks
1	On the Demographic data section, the question on the role in the project had a closed list of professional backgrounds (Construction Project Manager, Architect, Civil& Structural Engineer, Construction Manager, Quantity Surveyor and Site agent) locking out any other profession to whom the questionnaire could be administered.	This was revised to include the 'others' option to allow respondents provide an answer that is outside the researcher's predetermined list. The question was also re-phrased to include role in the firm.
2	There seemed to be some words missing in question six (6) of Section B	This was noted and the missing word included.
3	The scale used to measure the level of utilization of the facility (Likert scale of 1 being rarely and 5 being very frequently) was perceived not to provide the intended information.	This was revised to include statements that explained clearly the utilization of the facility for its intended use.

Source: Author, (2020)

3.6 Variables in the Study

3.6.1 Dependent variable (Y)

In this research, the dependent variable was the project harmony potential. The oxford illustrated dictionary defines harmony as “a combination or arrangement of parts to form a consistent and orderly whole.” Puttapalli and Vuram (2012) defined project harmony as being concerned with the mutual relationship between the management team and employees concerning the terms and conditions of employment at the workplace. It is a situation where a healthy and cooperative working relationship between employers and employees leads to improved output. A breach of these mutual expectations by either party strains the relationship between the project participants leading to a situation of project disharmony or conflicts (Wobodo, 2019). Previous studies on industrial harmony by several management scholars, for instance Puttapalli and Vuram (2012) and Wobodo (2019) used Mutual trust, the absence of strikes, and employee participation as the predictor variables to measure industrial harmony. In this study, project harmony was used metaphorically to refer to a situation of total

absence of conflicts in the construction project, through effective conflict management systems. This ultimately translates to a successfully performed project. Okaka (2019) defines project performance level as a tangible measure of the number of projects completed within a given time given a certain amount of budget allocation in making sure that the project contributes to the strategy of the organization and further achieves customer satisfaction. The project harmony level was measured through the following surrogates, which are the key performance indicators of project success:

- i. Time
- ii. Cost
- iii. Quality
- iv. Stakeholder involvement
- v. Project environmental impact
- vi. Operational Health and Safety
- vii. Mutual trust
- viii. User satisfaction

These surrogates were considered to be a result of effective conflict management in a project. Their subsequent levels were measured as detailed below, then combined to give a composite measure of the project harmony potential (Y) for correlation and multiple regression analysis.

- (i) **Time (Y₁):** Time performance is a measure of the time-lapse from the project commencement date to its practical completion. Normally, once the contractor signs the contract, he is expected to commence the actual construction and hand it over within a duration stipulated in the contract. This study was based on a post-project review, hence *time variation* was measured by comparing scheduled and the actual construction periods. This period was measured in days and weeks using the formula below:

Time variation

$$= \frac{\text{Actual construction time} - \text{Scheduled construction time}}{\text{Scheduled construction time}}$$

A 1-5 Likert scale was used to indicate the performance level as follows:

≤ 0.00	=5 (high)
$> 0.00 \leq 0.10$	=4
$> 0.10 \leq 0.20$	=3
$> 0.20 \leq 0.30$	=2
≥ 0.30	=1 (low)

- (ii) **Cost (Y₂):** Cost is one of the major considerations throughout the project management life cycle and can be regarded as one of the most important parameters of a project and the driving force of project success. Okaka (2019) refers to project cost performance as the financial resources incurred in a project, from the commencement to completion; the overall cost of the project including any cost arising from variations, change orders, cost arising from legal claims, measured in monetary terms.

In this study, the cost performance was measured by cost variation, by comparing project contract sum and the net final account. For this study, the cost variation was measured in Kenya Shillings using the formula below:

$$\text{Cost variation} = \frac{\text{Final account} - \text{Contract sum}}{\text{Contract sum}}$$

A 1-5 Likert scale was used to indicate the performance level as follows:

≤ 0.00	=5 (high)
$> 0.00 \leq 0.10$	=4
$> 0.10 \leq 0.20$	=3
$> 0.20 \leq 0.30$	=2
≥ 0.30	=1 (low)

- (iii) **Quality performance (Y₃):** Quality refers to the totality of features required by a product or service to satisfy a given need; fitness for purpose (Leong et al., 2014). In construction projects, these requirements were predefined by the client in the contract agreement. This study measured quality by appraising the project conformance to the client's requirements as provided in the drawings and project

specifications. Performance of quality was measured subjectively using a 5-point scale from 1(very dissatisfied) to 5(very satisfied).

(iv) **Stakeholder involvement (Y₄):** A project is successful when it achieves its objectives and meets or exceeds the expectations of the stakeholders (Kerzner & Saladis, 2013). Stakeholders are individuals who either care about or have a vested interest in the project and include both participants in the construction process and users of the final product. Key project stakeholders have been discussed in depth in section 2.2.2 of this study. This study dwelt on stakeholder involvement based on the level of consultation on conflict management strategies amongst the stakeholders during the design and construction stages. The level of consultation was measured by a 5-point scale from 1(Poor) to 5(Excellent). This was based on experience gathered on previous projects during the practice career of the respondents.

(v) **Project environmental impact (Y₅):** Construction projects during their life circles have a significant impact on the environment. Every phase of the construction process has a measurable environmental impact: the mining processes used to source materials, the transportation of these materials to the building site from sources around, the construction process itself, and the waste removal and disposal process that follows the completion of the project. In Kenya, NEMA is legally mandated under the Environmental Management and Coordination Act (EMCA) 1999 to undertake routine inspections on construction projects to ensure environmental compliance.

This study used environmental Impact assessment and the total number of complaints received during the construction phase as a measure of the project's environmental success. The performance was measured on a scale of 1 to 5 as follows:

1. Site closed at one incidence for whatever reason = 1 point
2. The site was not approved by NEMA, and there were complaints = 2 points
3. The site was not approved by NEMA, and there were no complaints = 3 points
4. The site was approved by NEMA, but there were complaints = 4 points

5. The site was approved by NEMA, and there were no complaints at all = 5 points

- (vi) **Operational Health and Safety (Y₆):** Construction is a high-risk industry owing to several accidents that take place in construction sites and more so in an environment where conflicts are inherent. Hughes and Ferrett (2008) maintain that occupational fatalities, injuries, and disease constitute defects as they are not project requirements. In fact, completing an activity without injury or disease indispensable project parameter and will constitute successful completion, within the planned time schedule, projected budget, and meeting quality requirements without damaging the environment (Okaka, 2019).

This study measured safety as a general condition on-site that promotes the successful completion of the project, without death and/or injuries on site, with a focus on the construction phase of the project. The nature of accidents by operational health and safety hazards was classified into three; death accidents as accidents leading to loss of life, heavy injuries accidents as those actuating hospital admission or absence from duty, and minor injuries accidents that can be treated on-site through first aid without a possible cause to absence from duty. The performance was measured on a 5-point scale as follows:

1. At least one death accident; or more than 30 cases of heavy and minor injuries = 1point
2. At least one heavy injury but no death; or 20 - 30 cases of minor injuries = 2points
3. 10 - 20 minor injuries accidents; and no heavy injuries or death accidents = 3points
4. 10 minor accidents; and no heavy injuries or death accidents = 4points
5. No accident occurred = 5points

- (vii) **Mutual trust (Y₇):** Bearing in mind that project stakeholders within the project possess incompatible interests that can only be achieved through synergy, the issue of trust becomes a necessary tool for an improved commitment of each party in fulfillment of their obligations. Mutual trust is considered paramount in building and sustaining project harmony because of the interdependent nature

amongst participants. This view was made clearer in Puttapalli and Vuram (2012) where mutual trust was considered as a positive employment relationship that acknowledges the interdependency of employers and employees and from which both parties accomplish their individual goals.

In this study, competence trust was measured based on the view of one party on the certainty of other participants in the project vehicle's ability to perform productively, while integrity trust was measured based on the confidence one party has in the other participants of the project vehicle keeping their word throughout the project. This was through a 5 Likert scale whereby, 1= Very low and 5= Very high.

- (vii) **User satisfaction (Y₈):** According to Baccarini (1999) in Okaka (2019) the project overall will be strategically oriented leading to the project goal, and therefore should be consistent with the strategic plans and purpose of the development. In principle, the project purpose gives the logic behind the project and draws its long-term objectives. For the project to be said to meet its project goal, then it is utilized for the intended purpose for development, e.g. Religious facilities, hospitals, or school projects will each have their specific objectives (Okaka, 2019).

In measuring the project goal in this research, a 5-point scale was applied as follows:

1. Completely unutilized project = 1point
2. Project is utilized for the unintended purpose =2points
3. A neutral response =3points
4. Project is partially utilized for the intended purpose =4points
5. Project is completely used for the intended purpose =5points

3.6.2 Independent Variables (X)

From the study hypothesis, the study sought to establish the relationship between conflict influencing factors and harmony potential of the projects as measured by the

indicators of project success discussed in the previous section. The independent variables considered were;

1. Delay management
2. Project suitability by environment (Political, Social, Economic environment)
3. Project team Partnering orientation
4. Direct provisions for conflict management in the Project Handbook
5. Promptness of Monitoring and Evaluation work
6. Technical Opinions/Approaches
7. CPM technical experience
8. Expertise of the CPM on psychology and criminology
9. Communication plan in the project
10. Personality management

i. Delay management (X₁): Delay, as referred to in construction, is a prolonged construction period and disruptions of events that disturb the construction program (Indhu & Ajai, 2014). There exist several ways of classifying delays. However, this study classifies delays into two; critical as delays that affect the project completion, or in some cases a milestone date, and non-critical delays which are delays that do not affect the project completion, or a milestone date (Theodore & Trauner, 2009). They categorized causes of delay in construction projects to be a result of factors resulting from either the client/ owner, the contractor, consultants, materials, or equipment as in Table 3.4 below.

Table 3.2: Categories of Conflict of Delay from Selected Groups

Cause group	Factors of delay
Client/ Owner	<ul style="list-style-type: none"> • Deliver the site • Delay in progress payments • Change orders by the owner during construction • Late in revising and approving design documents • Delay in approving shop drawing and sample materials • Poor communication and coordination • Conflicts between joint-ownership of the project • Suspension of work • Delay to furnish
Contractor	<ul style="list-style-type: none"> • Delays in site mobilization • Difficulties in financing project • Sub-contractors schedule in the execution of a project • Rework due to errors during construction • Poor communication and coordination • Ineffective planning and scheduling of project • Improper construction methods implement • Inadequate contractor's work • Frequent change of sub-contractors • Poor qualification of the contractor's technical staff
Consultants	<ul style="list-style-type: none"> • Delay in approving major changes in the scope of work • Poor communication and coordination • Inadequate experience of the consultant • Mistakes and discrepancies in design documents • Delays in producing design documents • Unclear and inadequate details in drawings • Insufficient data collection and survey before the design • Un-use of advanced engineering design software
Material and equipment supplier	<ul style="list-style-type: none"> • Shortage of construction materials in the market • Changes in material types and specifications during construction • Delay in material delivery from late procurement • Damage of sorted material while they are needed urgently • Delay in manufacturing special building materials • Equipment breakdowns • Shortage of equipment • Low level of equipment operator's skill • Low productivity and efficiency of the equipment • Lack of high-technology mechanical equipment

Source: (Adapted from Theodore & Trauner, 2009)

These factors have a direct relationship with conflict causative agents as discussed in the literature review of this study. An analysis of the responsibilities of delay causes by Indhu and Ajai (2014) concludes that a joint effort based on teamwork is required to overcome delays by eliminating any lethargic attitude of the management team in the initial process and proper planning. This study assessed the effectiveness of delay management to project harmony potential through availability or non-availability of conflicts by the main delay conflict cause groups of; client/ owner, contractor, consultants, and material and equipment supplier. A 5-point scale was used for measurement as follows;

1. Availability of conflict attributed to all four delay cause groups =1points
2. Availability of conflict attributed to only three of the delay cause groups =2points
3. Availability of conflict attributed to only two of the delay cause groups =3points
4. Availability of conflict attributed to only one of the delay cause groups =4points
5. No conflict attributed to any of the delay cause groups =5points

ii. **Suitability by environment (X₂):** The construction project environment is characterized by dynamic, uncertain but predictable: social-cultural, economic, political, physical, and aesthetic. Project environment refers to anything outside the boundaries of the project organization system (Kivaa, 2000). According to Benett (1985) in Kivaa (2000), variables of project environment interfere with the planned progress of the project at separate phases and may have a direct influence on the project objectives; In the early stages, political, bureaucratic, and special interest groups (e.g archaeologists, environmentalists, etc) are important while in the construction phase, weather, design information and material procurement problems tend to dominate the environmental influence. Kivaa (2000) adduces that the completion time of a project has a direct relationship with the rate of interference of the environment on the construction process and therefore the need for consideration of the project environment for proper planning during the project feasibility. The project suitability by social-cultural, economic, political, physical and aesthetic was measured on a 1 to 5 point scale based on the level of interference

by factors of project environment during the construction phase of the projects namely; construction regulatory bodies and local population, project political environmental forces and weather. as follows:

1. All the factors caused site closure at any instance of project implementation=1point
2. Only three of the factors caused site closure at any instance of project implementation=2points
3. Only two factors caused site closure at any instance of project implementation=3points
4. Only one of the factors caused site closure at any instance of project implementation=4point
5. None of the factors caused site closure at any instance of project implementation=5points

The potency of the project suitability by environment in effective conflict management was measured on a scale of 1-5 whereby 1=Ineffective and 5= Very effective.

iii. **Team partnering orientation (X₃):** The choice of partnering orientation determines to a large extent the project value and efficiency of the process, by having good relationships among parties involved which involves dedication to mutual objectives, commitment, trust, and teamwork among the parties in achieving goals. Partnering refers to a process to encourage good working relationships through a formal strategy based on commitment, trust, and communication. Without trust, teams lack the basis for open, mutual learning, communication, and real integration (Chan & Chan, 2004). Mutual trust breeds the reliability and integrity of the partners. Their research identified ten key conflict areas that partnering tends to mend namely; relationship problems, distrust, failure of sharing risk, culture barriers, uneven activity, communication problems, lack of continuous improvement, Inefficient problem solving, inadequate training, and dishonorable relationship. Although partnering is one of the methods that can improve the better relationship of project stakeholders during construction, an investigation by the

Systems Engineering Process Office (1997) indicates that the consequences of any conflicts in partnering can be a big threat to the project objectives.

For the purpose of this study, the project participants and stakeholders were required to rate the success of project team partnership orientation in attaining the project goals and objectives during project implementation on a scale of 1-5, whereby 1= Ineffective and 5= Very effective.

iv. **Direct provisions for conflict management in the Project Handbook (X4):**

Conflicts are unavoidable in any project management environment. Conflict management is a big challenge for all project managers but it is an important aspect in project management (Ntiyakunze, 2011). The PMBOK Guide by Institute of Project Management (2013) chapter 9 discusses five conflict resolution techniques each having its place or use as shown in the Table 3.5 below;

Table 3.5: Direct Provisions for Conflict Management in the PMBOK 2013 Guide

Method	Explanation	Group dynamics
1. Withdraw/avoid	Postponing the issue to be better prepared or to be resolved by others	Neutral/ Neutral
2. Smooth/accommodate	Emphasizing areas of agreement rather than areas of difference; conceding one's position to the needs of others to maintain harmony and relationships	Lose/ Win
3. Compromise/reconcile	Searching for solutions that bring some degree of satisfaction to all parties to temporarily or partially resolve the conflict	Lose/ Lose
4. Force/direct	Pushing one's viewpoint at the expense of others	Win/ Lose
5. Collaborate/problem solve	Incorporating multiple viewpoints and insights from differing perspectives; requires a cooperative attitude and open dialogue that typically leads to consensus and commitment	Win/ Win

Source: PMBOK 2013

These methods have been discussed in-depth in the literature review of this research. Knowing the different methods of conflict resolution will help in the technical aptitude of a good project manager; knowing the right situation to use these different methods of conflict resolution is the key to becoming a great one.

To measure the performance of the provisions of the project handbook in project harmony potential, this study used the frequency of use of these provisions namely; avoiding, smoothing, compromising, forcing, and collaboration, in general in the resolution of arising conflicts during project implementation. A 1-5 Likert scale was used, whereby 1= Ineffective and 5= Very effective.

v. **Promptness of Monitoring and Evaluation (X₅):** The PMBOK Guide by the Institute of Project Management (2013) defines monitoring and control of a project as “the process of tracking, reviewing, and regulating the progress to meet the performance objectives defined in the project management plan.” It further explains that monitoring includes status reporting, progress measurement, and forecasting. This puts monitoring and control at the center of ensuring that the project keeps within the planned path of performance; a project which is completed within planned time, budget, and quality is considered a success.

Monitoring requires planned and regular site inspections and meetings to review the three main aspects of time, cost, and quality. Control involves the action taken to contain or accommodate any deviations observed or proposed during monitoring. Therefore, to monitor and control, measurement of achieved progress and forecasting of future achievements regularly, are mandatory and the procedure and tools for doing so must be part of the project management plan.

This study measured the adequacy of monitoring and control through the availability of the following on a project: (a) Planned regular site inspections/meetings, (b) Regular update of work program/schedule, (c) Cost updates through financial appraisals, and (d) Updates on drawings and specifications. A 5-point scale was used for measurement as follows;

1. Availability of none of the above during construction = 1point
2. Availability of only one of the above during construction = 2points
3. Availability of only two of the above during construction = 3points
4. Availability of only three of the above during construction = 4points
5. Availability of all the above four during construction = 5points

This research measured the potency of prompt monitoring and evaluation in effective conflict management on a scale of 1-5 whereby 1=Ineffective and 5= Very effective.

vi. **Technical Opinions (X₆):** The construction process is characterized by uncertainty between the amount of information required to do a task and the amount of information already processed by the organization depending on the task complexity, that is the number of different factors that have to be coordinated or performance requirements such as time or budget constraints. Ntiyakunze (2011) lists these uncertainties as to the main cause of technical disputes in construction projects.

According to Ntiyakunze (2011), technical disputes include engineering clarification, which is a part of engineering decision making processes by the participation of the respective stakeholders in the construction process. Technical disputes are resolved through project management unlike the resolution of contractual disputes during project operations as most of them are within the error of omission. Technical expert opinions are necessary for the project implementation process by advising on any aspect of the project that could have been overlooked and offering technical support by the participants to eliminate factors that bedevil the project performance through technical conflicts.

In this study, the level of involvement and adoption of technical opinions towards project harmony was measured by the extent to which stakeholders who had been involved in projects of similar nature and magnitude within the past 5 years were provided with a platform through which they could share their experience in conflict management. A 5 point scale was used, whereby 1point= Never had the opportunity, and 5= Opportunity was always provided.

vii. **CPM technical experience (X7):** A construction project manager's role is fundamentally geared towards constituting a favorable internal environment within the project for the effective performance of individuals working together as teams. He puts his efforts to push the project towards its objectives. His managerial tasks include: ensuring that the project objectives are clear planning, organizing, and coordinating the services of the consortium (design team), the contractor, and other parties concerned with the development and marketing of the project. They must possess a combination of unique skills including the ability to ask acute questions, key out unstated assumptions, and proactively (Kartz, 1978 in Ntiyakunze, 2011)

According to Okaka (2019), the decisions made by a construction project manager have a direct tie to their technical capability and experience handling construction projects and have a great influence on the project performance, and by that virtual, the project harmony potential. This is not limited to their capacity to handle conflicts arising during the construction phase of the project. Therefore, this research will measure the competency or effectiveness of a construction project manager through a combination of his technical skills and relevant experience on a 5-point scale as follows:

1. Degree with over ten years' experience in construction = 5points
2. Degree with 5-10 years' experience in construction = 4 points
3. Degree with less than five years' experience, or diploma with over ten years' experience = 3points
4. Diploma with 5-10 years' experience, or certificate with over ten years' experience = 2points
5. Others = 1point.

viii. **Expertise of the CPM on psychology and criminology (X8):** The PMBOK defines a project as "A temporary endeavor undertaken to create a unique product, service or result". From this, we can infer that each and every project is a unique one in that a particular endeavor is undertaken in creating a particularly unique product, service, or result which cannot be replicated. Though the project itself is unique there is a common framework or methodology which helps the construction project managers manage the projects. Similar to the uniqueness of the projects,

the project managers who handle the projects are unique in themselves. A particular project if given to two different individuals, in all probability will be managed in two totally different ways, even though they follow the common framework. This is due to the inherent differences present in individuals (IBM Corporation, 2012).

Besides, the construction industry is very susceptible to crime. This, according to The Chartered Institute of Building (2009) is majorly attributed to such factors as the constant turnover of staff, the mobility of the workforce, and the temporary nature of project work which make the industry an easy target for both opportunistic petty criminals and serious organized crime. This more so happens in the cities and heavily populated areas, where an array of criminal acts occur – from theft to security racketeering. The nature of the construction workforce has also been quoted as a factor to be considered in the examination of crime in construction sites owing to the many temporary workers on-site whose number constantly change from day to day making it hard to enforce a strict site-access policy (The Chartered Institute of Building, 2009). The survey indicates high chances of conflicts as a result of such incidences of theft on-site and intimidation of workers.

A survey by IBM Corporation (2012) finds that the mental process is one of the main factors in which one individual varies from the other, this was directly linked to expertise in psychology. This also applies to construction project managers and project management as a process. Psychology refers to a science, which deals with human behavior and mental processes with a focus on cognition, emotion, and motivation cognition (IBM Corporation, 2012). Through cognition, the construction project manager can think critically, improve decision-making and problem-solving skill. Every good construction project manager needs to be good at leadership skills, have effective communication and problem-solving skills, be a good negotiator, and be able to influence others within the organization. Apart from their technical and project management skills, knowledge of psychology combined with criminology will assist in the way construction project managers perceive things, handle stress and manage a site with personality diversity with natural aptitude, making them more efficient. This research measured the

effectuality of expertise of CPM on psychology and criminology in conflict management during the project implementation on scale of 1-5, whereby 1= Ineffective and 5= Very effective.

- ix. **Communication plan in the project (X₉):** Effective communication during project implementation is important for the success of a project. Several researchers have quoted break down of communication as one of the major causes of conflicts. To have effective communication, Ntiyakunze (2011) concluded that the following are to be ensured: Project participants have an open and efficient way of informing each other as necessary; in project meetings, there is a good and efficient flow of information; the project has well-established information and communication routines; the project has a clear and well-planned agenda of meetings for all participants, and project stakeholders are well informed on project progress as necessary. Failure to these provisions will therefore result in ineffective communication that can cause misunderstanding or delays that affect the successful completion of a project.

For the purpose of this study, the project participants and stakeholders were required to rank the effectiveness of communication amongst stakeholders during project implementation on a scale of 1-5, whereby 1=Ineffective and 5=Very effective.

- x. **Personality management (X₁₀):** Construction is not a science, it is an art. It involves real people throughout the contract administration, all seeking a sense of acceptance and approval. Personality diversity problems include human interaction stress, personality type, individual differences (Religion, generation gap, level of education, etc.), individual ambition, desire for growth, cultures, and professional background among project team (Ntiyakunze, 2011).

In his research, Ntiyakunze (2011) uses words like belonging, imitation, loyalty, recognition, superiority, status as descriptive of the human elements of sociability. In their research on the management of conflicts through personality management, Anwar et al. (2012), integrates personality dimensions from the big five theory with inter-personal conflict among team players. From the model, they

identify the big five personality factors which are congruent with self-rating, rating by peer and by psychological staff as;

1. Extraversion (sociability and enthusiasm)
2. Agreeableness (friendliness and kindness)
3. Conscientiousness (organization and work ethic)
4. Neuroticism (emotion and moodiness)
5. Openness (imagination and insight)

By linking and integrating personality management with conflict management based on literature, Anwar et al. (2012) finds that the level of interpersonal conflict depends on the personality type of human beings interacting with each other. The research further posits that if an individual has an interpersonal conflict with other persons, then by predicting the other person's personality type, the individual may transform his personality components with the other personality types of the Big Five model for 'frequency matching' to avoid or reduce conflict levels.

In this study, the level of consideration factors of personality dimensions in improving the project harmony potential through effective conflict management during project execution was ranked on a 1-5 Likert scale, whereby 1=Ineffective and 5= Very effective.

Table 3.6: Variables in the Study

	Objective design	Variables	Conceptual definition	Operational definition	Scale	Data analysis
1.	To assess the relationship between delay management and the project harmony	<u>Independent variable</u> Delay management <u>Dependent variable</u> Project harmony potential	Interference of site operations due to conflict by factors of cause groups namely; Client/ owner, contractor, consultants, material, and equipment supplier.	Likert 5-point scale based on No. available	Ordinal	Descriptive and Inferential statistics
2.	To assess the relationship between project suitability by environment and the project harmony	<u>Independent variable</u> Project suitability by environment <u>Dependent variable</u> Project harmony potential	Effectiveness of project environment suitability in project harmony potential based on the level of interference by factors of project environment namely; construction regulatory bodies and the local population, project political environmental forces and weather	Likert 5-point scale based on No. of factors interfering with site operations at any instance.	Ordinal	Descriptive and Inferential statistics
3.	To assess the relationship between project team partnering orientation and the project harmony	<u>Independent variable</u> Project team Partnering orientation <u>Dependent variable</u> Project harmony potential	Success of the project team partnering orientation in attaining the project goals and objectives	Likert 5-point scale, 1= Ineffective, and 5= Very effective.	Ordinal	Descriptive and Inferential statistics
4.	To assess the relationship between direct provisions for conflict management in the Project Handbook and the project harmony	<u>Independent variable</u> Direct provisions for conflict management in the Project Handbook <u>Dependent variable</u> Project harmony potential	Performance of the provisions of the Project Management Body of Knowledge (PMBOK) Edition 6 (Chapter 9: Resource Management Section 9.5.2) in project harmony potential through frequency of general use in conflict resolution	Likert 1-4 scale, 1= Ineffective and 5= Very effective	Ordinal	Descriptive and Inferential statistics
5.	To assess the relationship between promptness of Monitoring and Evaluation work and the project harmony	<u>Independent variable</u> Promptness of Monitoring and Evaluation work <u>Dependent variable</u> Project harmony potential	Adequacy of monitoring and control through the availability of the following on a project: Planned regular site inspections/meetings, Regular update of work program/schedule, Cost updates through financial	Likert 5-point scale based on No. available	Ordinal	Descriptive and Inferential statistics

Objective design	Variables	Conceptual definition	Operational definition	Scale	Data analysis	
6.	To assess the relationship between technical Opinions/Approaches and the project harmony	<p><u>Independent variable</u> Technical Opinions</p> <p><u>Dependent variable</u> Project harmony potential</p>	<p>appraisals, and Updates on drawings and specifications.</p> <p>Level of involvement and adoption of technical opinions towards project harmony potential based on past experience.</p>	Likert 5-point scale, 1= Never and 5= Always.	Ordinal	Descriptive and Inferential statistics
7.	To assess the relationship between the CPM technical experience and the project harmony	<p><u>Independent variable</u> CPM technical experience</p> <p><u>Dependent variable</u> Project harmony potential</p>	CPM competency through a combination of his technical skills and relevant experience.	5-point scale based on the academic level and No. of years of relevant experience	Ordinal	Descriptive and Inferential statistics
8.	To assess the relationship between the expertise of the CPM on psychology and criminology and the project harmony	<p><u>Independent variable</u> Expertise of the CPM on psychology and criminology</p> <p><u>Dependent variable</u> Project harmony potential</p>	Level of expertise in psychology and criminology.	Likert 5-point scale, 1= Ineffective and 5= Very effective.	Ordinal	Descriptive and Inferential statistics
9.	To assess the relationship between the communication plan in the project and the project harmony	<p><u>Independent variable</u> Communication plan in the project</p> <p><u>Dependent variable</u> Project harmony potential</p>	Effectiveness of communication plan in the project	Likert 5-point scale, 1= Ineffective and 5= Very effective.	Ordinal	Descriptive and Inferential statistics
10.	To assess the relationship between Personality management and project harmony	<p><u>Independent variable</u> Personality management</p> <p><u>Dependent variable</u> Project harmony potential</p>	Performance of personality management in project harmony potential during project implementation	Likert 5-point scale, 1= Ineffective and 5= Very effective.	Ordinal	Descriptive and Inferential statistics

Source: (Author, 2021)

3.7 Data Analysis

The completed questionnaire was edited to ensure completeness, consistency and readability. Once the data had been checked, they were coded and arranged in a format that enables easy analysis and entered in IBM SPSS Statistics version 21 for statistical analysis. To avoid instances where the software generates incorrect analysis, the researcher ensured that the correct data is fed into the software.

Data was then analyzed through both descriptive and inferential statistics. Descriptive statistics comprises (i) measures of distribution i.e. percentages and frequencies, (ii) measures of central tendencies i.e. mean, mode, and median, and (iii) measures of variability i.e. standard deviation and variance (Mugenda & Mugenda, 2008).

For inferential statistics, Pearson's correlation and stepwise linear regression analysis were used to determine whether there exists a relationship between the project harmony potential and the independent variables factored in the conceptual framework. This is because most of the data more so from the dependent variable was continuous. Pearson's correlation coefficient (r) was used to establish the significance, direction, and strength of the linear relationship between the project harmony potential and the independent variables. The strength of the relationship was indicated by Pearson's correlation value where an absolute value of 0.1 – 0.29 indicates a weak linear relationship, 0.3 – 0.49 indicates a moderate linear relationship, while above 0.5 indicates a strong linear relationship between the variables of interest (Kothari, 2004). Again, the sign of the correlation coefficient value indicates the direction of the relationship. Finally, the p-value was used to determine the significance of the relationship. Since this is a social research, a significance level of 0.05 was applied in testing the hypothesis. According to Bryman (2012), 5% is the maximum level of risk that is conventionally taken in social research.

Stepwise regression was applied to establish what kind of predictive model best fit the relationship. The preference for stepwise regression is because the choice of predictive variables is carried out by an automatic procedure. The addition of predictor or

independent variables to the model in each step is based on a pre-specified criterion. In this case, the adjusted coefficient of determination (R^2) criterion was used.

The algebraic model used to test the hypothesis is as stated in section 1.4.

The research hypothesis is that $\beta_i = 0$, for at least one β , while the null hypothesis is that $\beta_i \neq 0$, for all β_i ;

The study performed several tests on various assumptions of correlation and regression analysis in order to retain the validity of results, namely: Normality, Homoscedasticity, linearity, and No-multicollinearity. The nature of the variables was also observed. The dependent variable was assumed to be continuously measured in scale level of measurement.

Under normality, the residuals are assumed to be normally distributed with a zero mean and a constant variance. This assumption will be tested using a normal probability plot. According to Pallant (2007), if all the values tend to lie on the straight line cutting across the diagonal, then the residuals are assumed to be normal. The dependent variable is also assumed to be normally distributed, and this was tested using the Shapiro Wilk test of Normality. In regression analysis, the error terms are assumed to be the same across all values of the independent variables. A residual scatter plot for predicted scores and standardized residual values also known as errors of prediction will be used to test for homoscedasticity.

Finally, on multicollinearity, it is assumed that the independent variables should not be highly correlated (Kothari, 2004). Variance Inflation Factors (VIF) and tolerance values will be used to test for multicollinearity. According to (Gujarati, D. C. and Porter, 2008), a tolerance with a value close to **1** means there is little multicollinearity, whereas a value close to **0** suggests that multicollinearity exists, while a VIF of more than **10** ($VIF \geq 10$) indicates a problem of multicollinearity. Again, Pearson's correlation analysis among the independent variables will be used to examine multicollinearity. A high Pearson's

correlation coefficient value of 0.9 and above is considered to indicate the presence of multicollinearity (Kothari, 2004).

3.7.1 Relative Severity Index Analysis

Data in section C consisted was of a mixture of nominal and ordinal scales and thus a number of statistical procedures were employed in the analyses of the data beginning with basic descriptive statistics to more complex procedures such as the Relative Severity Index (RSI). The main aim of carrying out the Relative Severity Index (RSI) was to determine the most severe impacts of conflicts on a construction project. This is represented by the following formula:

$$RSI = \frac{\sum W}{(B \times N)} \times 100$$

Where;

W =the weighting given to each impact by respondents, ranging from 1 to 5

B = the highest weight (i.e. 5 in the study)

N =the total number of samples

3.8 Reliability of Research Instrument

Reliability is concerned with the consistency with which a concept is measured. It refers to a measure of the degree to which reliable results are provided by testing tools. (Mugenda & Mugenda, 2008). Reliability analysis in this research was done using Cronbach's Alpha which measured the internal consistency by establishing if a certain item within a scale measures the same construct. This was achieved by dividing the results obtained on a questionnaire by a respondent into two sets with an equal number of scores and measuring the correlation between these two sets. A high correlation will indicate a high internal consistency level. Gliem (2003) had indicated a value of 0.7 to be an

acceptable reliability coefficient but lower thresholds are sometimes used in literature especially where the number of variables is less than 10. According to Ogwueleka (2011) as cited by Ibrahim (2014) asserts that the minimum acceptable value for Cronbach's alpha is from 0.5, thus forming the study's benchmark.

3.9 Validity

Validity applies to the accuracy and reliability of the instruments and acquired data. It refers to the extent to which a measurement properly reflects what it claims to measure (Hair Jr, 2014). The term refers to the degree to which a certain collection of indicators accurately assess a given idea (Bryman, 2012). The accuracy of conclusions drawn from the study relies on the credibility of the research tools and the information they gather. This study included the following methods to establish validity.

3.9.1 Content Validity

To ensure the content validity of the research instrument used, the researcher presented the questionnaire to six experts. These were; two contractors, two lecturers from Jomo Kenyatta University of Agriculture and Technology, and a practicing professional in construction project management. Given that the two academicians consulted were also practicing in the Kenyan construction industry, the researcher obtained comments and input relevant to the proposed area of study. Remarks made by these experts together with those obtained from the pilot study were taken into consideration when making adjustments to the final questionnaire. Contents of the validity helped the researcher to ascertain whether to include or represent all the content of the research in the study. Test-retest approach enabled the researcher to test consistency among different questionnaires as filled by the respondents. Verbal consent was also obtained from the respondents who consent to be part of the study. (Mantel & Meredith, 2006)

3.9.2 Face Validity

Face validity is the extent to which a measure reflects the content of the concept it measures. It is the extent to which the instrument appears, at face value, to measure what it is supposed to measure (Johnson, 2013) According to Bryman (2012), face validity is essentially an intuitive process. Leading academicians and field experts were used as judges of determining whether the measures used seemed to reflect the study concepts and/or constructs.

3.9.3 Criterion Validity

Criteria validity refers to how well a measurement may predict specified criteria variables. Criterion validity may be categorized into two types: concurrent and predictive validity.

3.9.3.1 Concurrent Validity

Concurrent validity assesses how a new measure correlates with an established one by testing them simultaneously. This study achieved concurrent validity by using both objective and subjective measures in the questionnaire and collecting data from contractors and consultants at the same time. Correlations were analyzed between the different measures and data sources to identify any statistical discrepancies.

3.9.3.2 Predictive Validity

Predictive ability is the extent to which results on a measurement accurately predict future performance on a different measure of the construct (Cohen & Swerdlik, 2005). Results from statistical analyses such as correlations and regression were used to demonstrate the scale's predictive validity.

3.10 Ethical Considerations

The study participants were clearly enlightened about the nature of the study, and further informed their participation in the study was voluntary, anonymous and confidential, and

that they would be free to withdraw their participation in the research at any point of the study with repercussions. All of the aspects of the research that were likely to affect their willingness to become participants were disclosed. This included the time the session was likely to take. Furthermore,

Privacy and confidentiality of the respondents and their response were ensured throughout the study, and not shared as its need was strictly to be used for the purpose of this study objectives. The researcher held a moral obligation to treat all information with utmost propriety due to the sensitivity of the information to be collected. In general, the researcher complied with all research ethics.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents data analysis, presentation, interpretation, and discussion. The chapter is divided into six main sections as follows: response rate and background information, descriptive statistics for project harmony potential, the practice of conflict management in construction projects, descriptive statistics for determinants of harmony potential in construction projects, correlation and regression analysis, and schematic framework for managing conflicts in construction projects.

4.2 Response Rate and Background Information

In this study, a total number of 158 questionnaires were administered to construction consultancy firms and contractor firms. The questionnaires were evenly distributed to the respondents, and a total of 122 questionnaires were returned properly completed from a total sample of 158 respondents translating to a 77% positive response to the survey. According to Babbie (2007), as cited in Lamka (2015), any response rate over 50% can be reported as statistically adequate as a whole to represent the total population; over 60% is good, and over 70% is excellent. These views are shared with (Mugenda & Mugenda, 2008) who asserts that in a questionnaire administration, a response rate of 50% is adequate for analysis and reporting. He further states that 60% is a good response while 70% and over is very good. Therefore, the response rate in this study was excellent and sufficient for data analysis.

4.2.1 Role of the Respondent in the Firm

As established through review of literature, any construction project involves the engagement of a wide range of professionals whose roles, responsibilities, level of involvement, and cooperation during the construction process are determined by the

procurement method followed. This implies that the performance and harmony are streamlined towards achieving the goals and objectives of these parties. Noteworthy, while the developer hires consultancy firms for the needed services in the project implementation, contracting firms also hire different professionals, depending on the nature of the activities carried out by the firm. For instance, a contractor doing a design and build project will require a wide range of services from different professionals ranging from Project Managers (for overall planning and execution), architects (to produce the architectural drawings), civil/structural engineers (to produce the structural drawings), quantity surveyors (to produce the bills of quantities), Construction Managers (to supervise the construction works), services engineer (to produce the mechanical, electrical and other drawings). Other personnel in project execution include site engineers, site agents, and foremen among others.

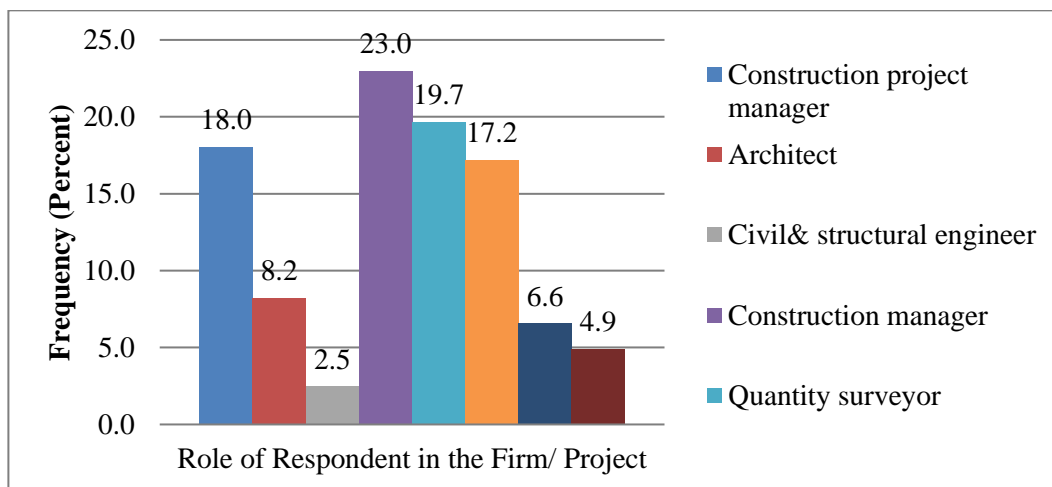


Figure 4.1: Role of Respondent in the Firm/Project

Source: (Author, 2020)

The figure above (4.1) indicates that the highest percentage (23%) of respondents were construction managers followed by quantity surveyors (19.7%) while the lowest was civil & structural engineers with a representation of 2.5%. The category of “Others” produced a variety of options including; an electrical engineer, a site engineer, a Quality

Assurance Analyst, and an accountant. These professionals were distributed through the building consultancy and contractor firms.

4.2.2 Respondent's Area of Technical Training

The respondents were requested to indicate the highest level of education they were involved in the construction industry.

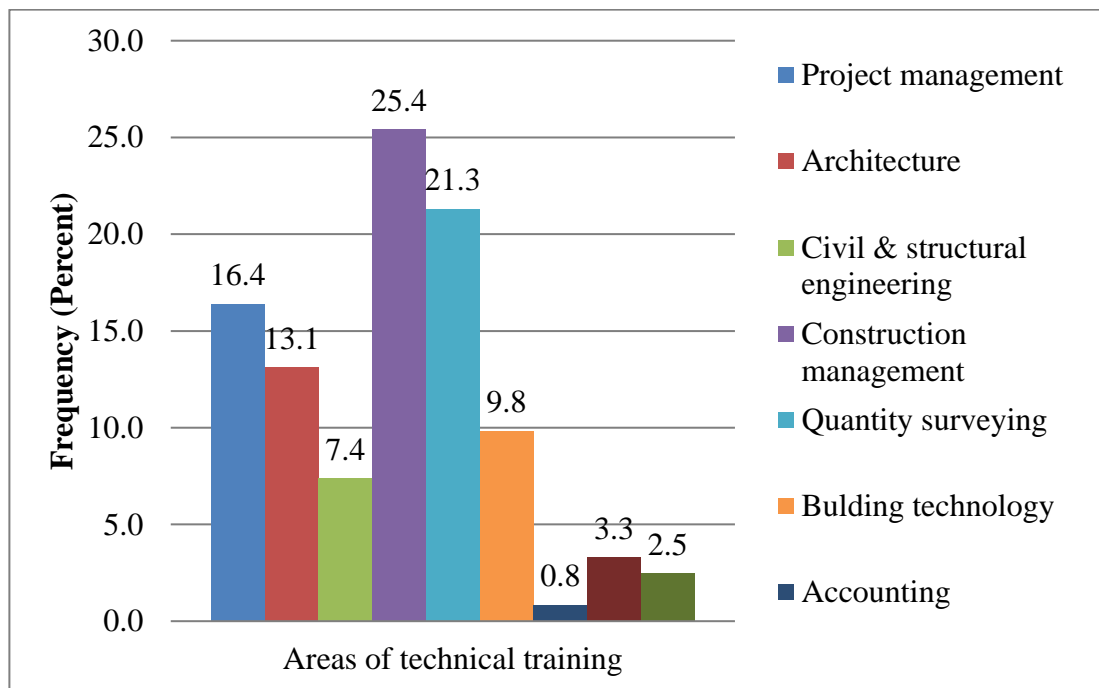


Figure 4.2: Respondent's Areas of Technical Training

Source: (Author, 2020)

Results shown in Figure 4.2 indicated that Construction Management (25.4%) was the most popular academic background among the respondents while Accounting was the least popular (0.8%). Other educational specializations were represented as follows: Quantity surveying, 21.3%; Project management, 16.4%; Architecture, 13.1%; Building technology, 9.8%; Civil/Structural Engineering, 7.4%; and Electrical engineering. Developers and equally contractors hire professionals trained in Construction

Management to oversee project execution processes especially on the site since by training they can understand the language of other project professionals including architects and civil engineers among others. While Construction projects exhibit a mix of professionals with varied training background employed for office chores, a low frequency of response from accountants and economics was because the researcher preferred to engage respondents with a background in construction-related courses as this would be easier for them to answer the questions presented to them.

4.2.3 Respondents' Highest Level of Education Worked in the Construction Industry

The respondents were requested to indicate the highest level of education they were involved in the construction industry.

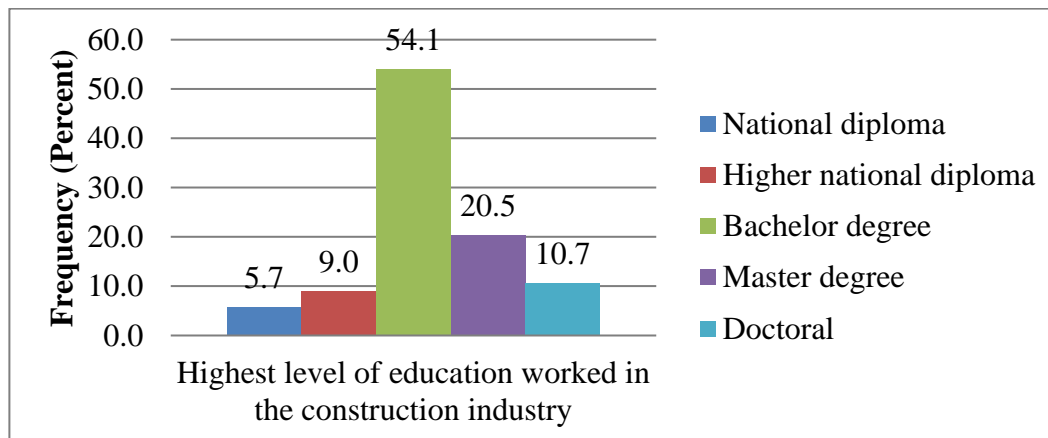


Figure 4.3: Highest Level of Education Worked in the Construction Industry

Source: (Author, 2020)

From the research findings, the study noted that 54.1% held bachelor's degree, 20.5% of the respondents indicated to hold master's degree, 10.7% of the respondents indicated to hold PhD, 9.0% held Higher National Diploma, while only 5.7% held Diploma certificate. This infers that respondents were educated thus able to respond to research questions easily. It also indicates that the construction industry is run by very well-educated professionals.

4.2.4 Respondent's Management Level

The graph below illustrates the frequencies of the different levels of management currently held by the respondents in the contracting firms.

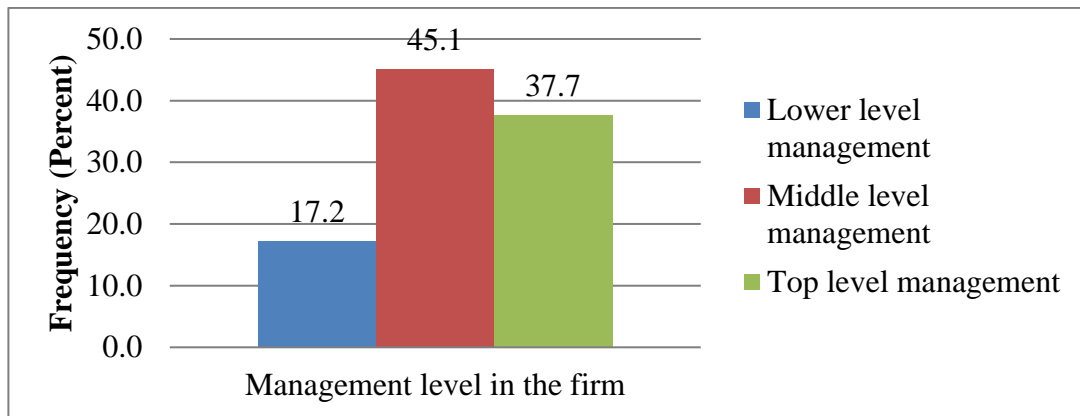


Figure 4.2: Respondent's Management Level

Source: (Author, 2020)

Majority (45.1%) of the respondents engaged in this survey indicated that they were in middle-level management (as seen in figure 4.3). Those in top-level management formed 37.7% of the respondents while those in low-level management were 17.2%.

4.2.5 Experience in the industry

From the survey, it was realized that the respondents have had a considerable number of years' experience in the construction industry as shown in Table 4.1 below.

Table 4.1: Industry Experience of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	6	4.9	5.0	5.0
	5-10 years	18	14.8	14.9	19.8
	10-15 years	50	41.0	41.3	61.2
	Over 15 years	47	38.5	38.8	100.0
	Total	121	99.2	100.0	
Missing	System	1	.8		
Total		122	100.0		

Source: (Author, 2020)

The intention of getting to know the duration of experience with the respondents was foremost to test the suitability of each; in repetitive works, the longer the stay in an occupation, the more reliable will be the responses from the respondents.

Results from the Table 4.1 indicated that the majority of respondents (41.3%) had experience of between 10 to 15 years followed by 38.8% with over 15 years' experience in the construction industry. The lowest number was respondents with less than 5 years of experience, while those with 5 to 10 years' of experience formed 14.9% of the respondents.

4.2.6 Nature of Project

The graph below (Figure 4.5) illustrates the frequencies of the different types of projects being executed by the respective respondents.

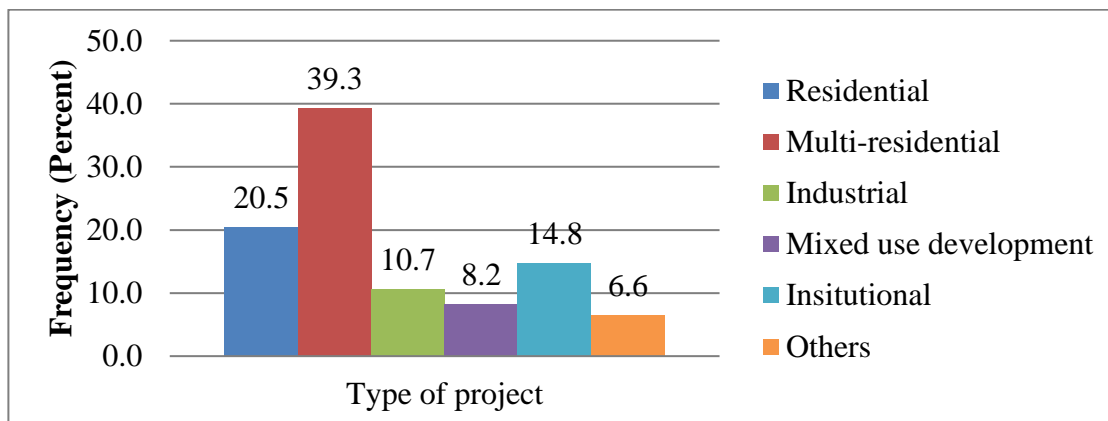


Figure 4.5: Nature of Project

Source: (Author, 2020)

Results from the survey indicated that the majority of the projects executed by the respondents within the last 5 years were multi-residential (39.3%; residential (20.5%); Institutional (14.8%) and Industrial (10.7%). Mixed-use development and “others” were least popular with frequencies of 8.2% and 6.6% respectively.

4.2.7 Number of Similar Projects in the Past 5 years

Table 4.2 below illustrates the frequencies of the number of similar projects the respective respondents had been actively involved in the past 5 years of practice.

Table 4.2: Number of Similar Projects in the Past 5 Years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5 projects	12	9.8	9.9	9.9
	6-10 projects	52	42.6	43.0	52.9
	11-15 projects	44	36.1	36.4	89.3
	Over 15 projects	13	10.7	10.7	100.0
	Total	121	99.2	100.0	
Missing	System	1	.8		
Total		122	100.0		

Source: (Author, 2020)

The results from Table 4.2 showed that the majority of the respondents (43%) had actively been involved in 6 to 10 projects of a similar magnitude within the study period of 5 years, while cumulatively, 47.1% of the respondents had been actively participated in over 10 projects of similar magnitude within the study period. These findings imply that the majority of the respondents were experienced with information regarding the factors which influence project harmony on construction sites. The respondents were, therefore, people in a position to provide or suggest ways in which to manage conflicts. The feedback from the findings, therefore, could be interpreted to suggest that the subjects who had the authority to make important decisions about conflict management in their respective organizations took part in the study. This adds to the quality and credibility of the feedback from the study

4.2.8 Category of Firm

Construction projects of big magnitudes (over half a billion shillings) usually attract interest from not only local but also foreign contractors. Results indicated that Local contractors had the highest frequency of 77% followed by foreign contractors with a frequency of 13.9% and the African contractors with a frequency of 9%. The construction industry is mainly composed of local firms.

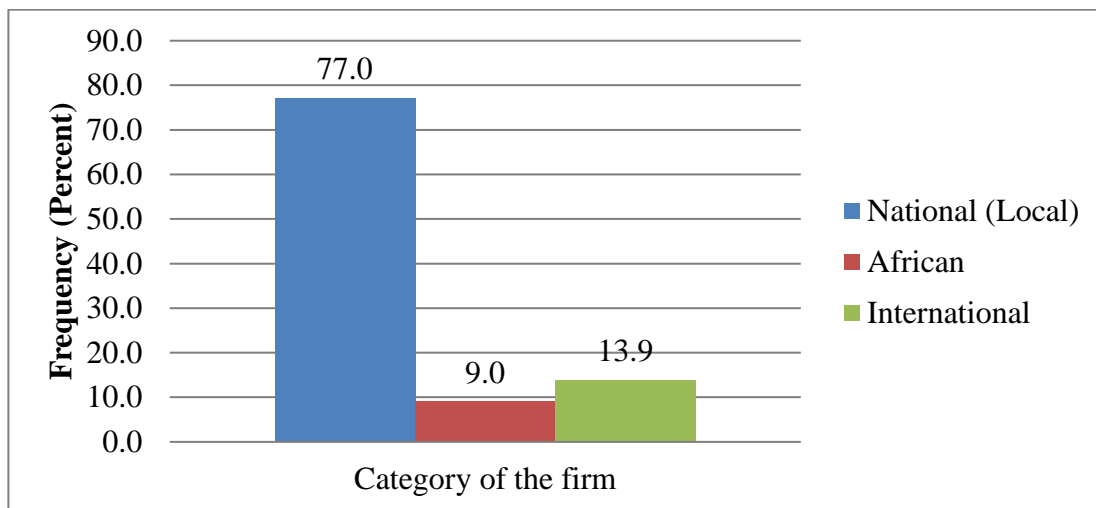


Figure 4.6: Category of Firm

Source: (Author, 2020)

An exceptionally high frequency for Local contractors meant that the results of this study would comfortably reflect the views and position of local firms regarding conflict management.

4.3 Descriptive Statistics for Project Harmony Potential

The first objective in this study aimed at describing project harmony potential for construction projects in Kenya. This was achieved through an extensive literature review where nine indicators were identified. Table 4.3 shows descriptive statistics for project harmony indicators namely time performance, cost performance, quality performance, stakeholder involvement, project environmental impact, safety performance, mutual trust and user satisfaction. The table also shows the descriptive statistics for the overall project harmony potential (Y). The findings reveal that the project's harmony potential for all the projects responded to, had an average of 3.82 and a standard deviation of 0.275. This indicated that the projects were successful on average. On-time performance, the findings reveal that the projects were unsuccessful as indicated by a mean value of 2.27 and a standard deviation of 0.75. The relatively high standard deviation indicates a significant

degree of variability in time performance across the projects, suggesting that some projects may have experienced substantial delays while others were relatively on schedule. The projects were very successful in cost, safety and mutual trust performance as indicated by a mean value of 4.29, 4.58, 4.31 and standard deviations of 0.632, 0.616, and 0.719 respectively. Moderate standard deviation on cost performance indicates that while most projects were successful in managing costs, there were still some variations in cost performance across the sample. This can also be adduced for Operational Health and Safety performance. Finally, on quality, stakeholder involvement, environmental impact, and user satisfaction, the projects were found to be successful on average as indicated by mean values of 3.84, 4.20, 4.15, 3.21 and standard deviations of 0.731, 0.483, 0.984 and 0.921 respectively. The relatively high standard deviation for quality performance shows a substantial diversity in quality performance among the projects, indicating that although the average quality performance was good, there were noticeable disparities in the quality results of each project, while stakeholder involvement had a low standard deviation suggesting that most projects were successful in engaging stakeholders effectively and consistently.

Table 4.3: Descriptive Statistics of the Project Harmony Level Indicators and the Project Harmony Potential

Project harmony indicators	N	Min	Max	Mean	Std. Dev	Skewness	Kurtosis
Time performance	106	1.00	5.00	2.27	.750	-.332	-.079
Cost performance	115	3.00	5.00	4.29	.632	-1.036	.0242
Quality performance	117	1.00	5.00	3.84	.731	0.000	-.722
Stakeholder involvement	118	2.80	5.00	4.20	.483	.410	-.387
Project environmental impact	120	1.00	5.00	4.15	.984	.068	-.818
Operational Health and safety	121	2.00	5.00	4.58	.616	-.0701	.45
Mutual trust	120	3.00	5.00	4.31	.719	-.346	-.209
User satisfaction	121	2.00	5.00	3.21	.921	-.659	1.214
Project Harmony potential	97	3.18	4.48	3.82	.275	-0.246	-0.066

Source: (Author, 2020)

Based on the findings, that the data is slightly left-skewed on average and tends to have a platykurtic distribution. This implies that the distribution of the data is relatively more spread out with fewer outliers compared to a normal distribution as indicated by an average skewness of -0.246 and Kurtosis of -0.066.

4.4 The Practice of Conflict Management in Construction Projects.

A number of questions were included in the questionnaire to explore the practice of conflict management in construction projects in Kenya. These included: the rate of interference of project site operations by dysfunctional conflicts between participants, the person bestowed with the responsibility of carrying out conflict management in the firm, the frequency of conflict resolution amongst selected groups of project participants, areas of conflict in construction projects, preference on conflict resolution approaches, the level of impacts associated with conflicts, and, expert opinion on other best practices and strategies that can be used in conflict management as recommended by the respondents.

4.4.1 Interference of Project Site Operations by Dysfunctional Conflicts

From the Table 4.4 below, when respondents were asked to rate the extent to which site operations in their projects were interfered by dysfunctional conflicts between participants, 3.3% responded “None”, 9.1%, “Low”, 39.7%, “Moderate”, 38.0%, “High”, and 9.9%, “Very High”. These responses produced a mean of 3.42 as indicated in Table 4.4. This displays the inevitability of conflicts in construction projects.

Table 4.4: Project Progress Interference by Conflict

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	4	3.3	3.3	3.3
	Low	11	9.0	9.1	12.4
	Moderate	48	39.3	39.7	52.1
	High	46	37.7	38.0	90.1
	Very high	12	9.8	9.9	100.0
	Total		121	99.2	100.0
Missing	System	1	.8		
Total		122	100.0		

Source: (Author, 2020)

4.4.2 Responsibility of Conflict Management

The chart below (Figure 4.7) shows results regarding those bestowed upon the responsibility of carrying out conflict management in their respective firms. As seen from the Figure 4.7, the most popular profession in conflict management is Construction Project Managers with a frequency of 46.8%. Other results were: construction managers, 25.1%; Quantity surveyor, 14.9%; and Architect, 13.2%. These results are reflective of what Morris et al. (1998) assert by saying that it is the responsibility of the project manager to review and understand the dynamics of conflict in a project by considering the internal characteristics of conflicts which include perception of the goal, perception of opposing views and actions, the definition of the problem, communication, and internal social psychology in group dynamics, and resolve it.

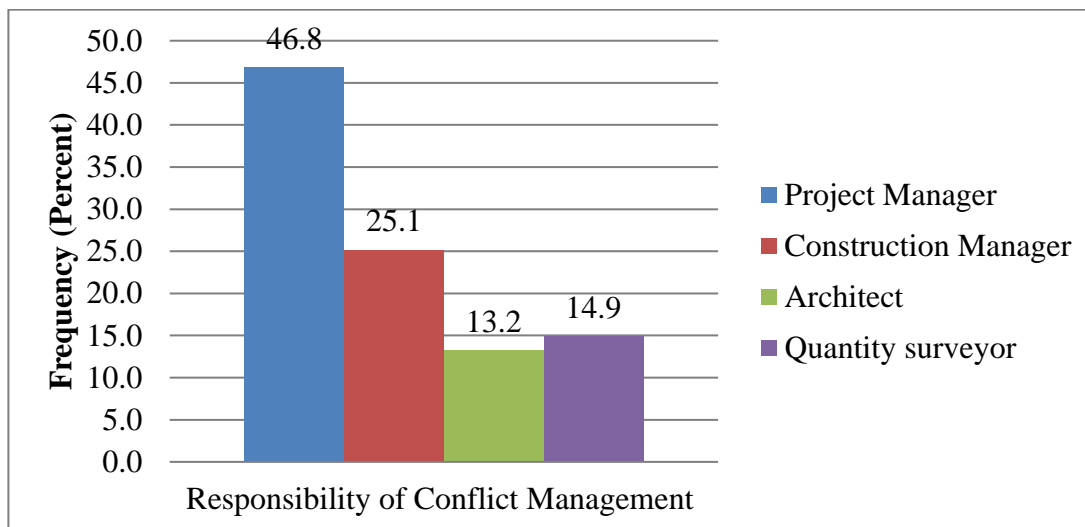


Figure 4.7: Responsibility of Conflict Management

Source: (Author, 2020)

4.4.3 Frequency of Conflict Resolution amongst Selected Groups of Project Participants

Respondents were asked to rate the frequency of conflict resolution amongst selected groups of participants considered as the main stakeholders in a construction project, for the different projects they had been directly involved within 5 years. Table 4.5 below shows the descriptive statistics for the rate of conflict amongst the selected groups. The findings reveal that the rate of conflict resolution carried between the design team and contractor, and between the developer and contractor for all the projects responded to, was above average, with a mean of 4.63 and 4.31, and a standard deviation of .732 and .904 respectively. The rate of conflict resolution between the design team and developer had a mean value of 3.58 which is an average performance, and a standard deviation of 0.761, suggesting that while the average conflict resolution rate was at an average level, there were some variations across the projects. Finally, the rate of conflict resolution between the developer and material supplier, and between contractor and sub-contractor was found to be below average, with a mean of 2.69 and 2.29 and standard deviations of 0.753 and

0.688 respectively. This indicates that the frequency of conflicts amongst these groups rated from the lowest to the highest is between; contractor and sub-contractor; developer and material supplier; design team and developer; developer and contractor; and, design team and the contractor. The variability in the frequency of conflict resolution was highest between developer and contractor as indicated by the high standard variation, and lowest between contractor and the sub-contractor, indicating that most projects experienced consistent and below-average conflict resolution rates in this relationship.

Table 4.5: Extent of Conflict Resolution amongst Selected Groups

Project groups	N	Minimum	Maximum	Mean	Std. Dev
Design team and contractor	121	2	5	4.63	.732
Design team and developer	121	1	5	3.58	.761
Developer and contractor	121	1	5	4.31	.904
Developer and material supplier	121	1	4	2.69	.753
Contractor and sub-contractor	121	1	5	2.29	.688

Source: (Author, 2020)

4.4.4 Areas of Delay Conflict in Construction Projects

The respondents were asked to provide sources of conflicts that led to interference of site operations during the project implementation process and attribute the sources of conflicts to either of the selected groups in construction projects that had been identified in the literature review. These groups included Developers, contractors, consultants, and suppliers of material and equipment. The factors which cause delays in construction projects were then allocated as per the attributed group and ranked based on their frequencies following the respondents' views with the factors that scored the highest mean being ranked top factors that cause delay conflicts in the building construction. The conflict sources identified were represented in Table 4.6.

Table 4.6: Sources of Delay Conflict in Construction Projects

Group	No.	Factor of delay conflict	Mean (μ)	Rank
Clients	1	Delay to hand over site	31.54	7
	2	Delays in progress payments	38.41	1
	3	Late in revising and approving design documents	23.64	21
	4	Compensation issues	20.48	27
	5	Late delivery of material	26.68	12
	6	Contractual claims	21.88	26
	7	Suspension of work	25.12	18
	8	Poor communication and coordination	25.98	16
Contractors	9	Delays in site mobilization	32.06	6
	10	Rework due to errors during construction	22.22	25
	11	Late delivery of material	25.88	17
	12	Difficulties in financing project	35.26	3
	13	Incompetent contractors	28.55	9
	14	Frequent change of sub-contractors	23.33	22
	15	Poor communication and coordination	23.25	23
	16	Accidents during construction	10.33	42
	17	Poor understanding of the project	18.33	34
	18	Multiple projects by contractors	23.87	20
	19	Poor site management and supervision	36.05	2
	20	Inappropriate construction methods	27.13	11
	21	Ineffective planning and scheduling of project	32.17	5
	22	Poor qualification of the contractor's technical staff	33.81	4
Consultants	23	Complexity of the project design	16.88	37
	24	Delays in producing design plans	26.12	13
	25	Mistakes and discrepancies in design documents	19.03	32
	26	Delays in approving major changes on scope	20.22	28
	27	Improper planning	19.26	31
	28	Changes on schedule and design documents	19.87	30
	29	Inaccurate cost estimation	12.54	40
	30	Inaccurate time estimation	10.88	41
	31	Supply / procurement problems	18.20	35
	32	Poor understanding of the project	18.02	36
	33	Inadequate experience of the consultant	19.88	29
Material and equipment supplier	34	Delay in material delivery from late procurement	26.02	15
	35	Changes in material types and specifications during construction	15.55	38
	36	Delay in manufacturing special building materials	22.63	24
	37	Damage of sorted material while they are needed urgently	18.98	33
	38	Late in selection of finishing materials due to availability of many types in Market	13.54	39
	39	Shortage of high-tech mechanical equipment	28.02	10
	40	Equipment breakdowns	29.56	8
	41	Low level of equipment-operator's skill	26.08	14
	42	Low productivity and efficiency of equipment	24.56	19

Source: (Author, 2020)

As it is shown from Table 4.6, the highest contributor of delay conflict is "Delay in progress payments" by the client with a mean of 38.41. The second factor is "Poor site management and supervision" by contractor which has a mean of 36.05. In the third place, the factor "Difficulties in financing project" by the contractor followed in the fourth place by the factor "Poor qualification of the contractor's technical staff" with a mean of 35.26 and 33.81 respectively. The fifth factor is "Ineffective planning and scheduling of project" by the contractor" which has an importance index of 32.17. The least factor in the list is "Accidents during construction" by contractors with a mean of 10.33.

It can be realized from the respondents that conflicts can result from either of the stakeholders, with contractors having the largest contribution to delay conflict with 14 factors out of the 42 factors that were analyzed for the causes of construction delay conflicts. 11 factors were caused by consultants, 9 factors were caused by material and equipment supplier, while 8 were caused by Clients.

4.4.5 Preference on Conflict Resolution Approaches

According to Ntiyakunze (2011) there exists no specific formula for managing public relations, and therefore, conflicts. However, existing literature supports five modes of dealing with conflicts in most organisations. For construction projects, these modes or strategies have been provided for in the PMBOK 5th edition. The findings for the preference on the conflict resolution approaches was based on the general application of these modes namely; Collaboration, compromising, smoothing, forcing and avoiding. The respondents' frequency of use of the approaches was summarized in the Table 4.7 below. The data collected was useful in determining the most preferent areas of conflict in construction projects in Kenya since the preference and appropriateness of each of the approaches may be determined by the nature of the conflict.

Table 4.7: Preference on Conflict Resolution Approaches

	N	Minimum	Maximum	Mean	Std. Dev
Avoiding	122	1	3	2.44	.531
Smoothing	122	2	4	3.32	.549
Compromising	122	2	4	3.47	.563
Forcing	122	2	4	3.06	.647
Collaboration	122	2	4	3.52	.518
Valid N (listwise)	122				

Source: (Author, 2020)

As shown in the Table 4.7 the most frequently used approach in conflict resolution is collaboration with a mean score of 3.52 and a standard deviation of 0.518, followed by compromising and smoothing with mean scores of 3.47 and 3.32 respectively. The next frequently used conflict resolution approach used is forcing with a mean score of 3.06 and a standard deviation of 0.647. The least preferred approach is avoiding, with a mean score of 2.44.

It is the style or approach of conflict resolution and the technique used that determines a positive or negative outcome. Hence, based on the outcome of conflict resolution in picture, the different areas or nature of conflict will dictate a particular approach for the best results (Ntiyakunze, 2011). The findings indicate that most of the conflicts in construction projects in Kenya are the conflict types that will invoke collaboration as the conflict resolution approach, down to areas of conflict that will invoke forcing as the preferred conflict resolution approach. This is based on the literature that each of the conflict resolution approaches is preferred for an area of conflict types as provided on Table 2. 4 in section 2.5. The Table 4.7 provides a summary of the preferred areas of conflict for the respective conflict resolution approaches from the most frequently used approach to the least used.

4.4.6 The Level of Impacts Associated with Conflicts

The respondents were asked to rate the following impacts of conflicts in construction projects that had been identified in the literature review; Abandonment of projects leading to loss of valuable time and money, Increasing project cost, Delays in project delivery, Possibility of litigation, Feel of frustration that manifests as aggressive behaviour, Loss of profitability and perhaps business viability, Loss of company and professional reputation and Diminution of respect between parties deterioration of relationship and breakdown in cooperation

The **Relative Severity Index (RSI)**, was used for the ranking. After tallying the various weights given by the respondents to each of the impacts and the application of the formula, the impacts were ranked with the most severe factor having the highest relative index as shown in Table 4.8.

Table 4.8: The Level of Impacts Associated with Conflicts

No.	Impact of conflicts on construction projects	*ΣW	B*N	RSI	RANK
1	Abandonment of projects leading to loss of valuable time and money	349	610	57.21	9
2	Increasing project cost	527	610	86.39	3
3	Delays in project delivery	549	610	90.00	2
4	Possibility of litigation	405	610	66.39	7
5	Feel of frustration that manifests as aggressive behaviour.	382	610	62.62	8
6	Loss of profitability and perhaps business viability	569	610	93.28	1
7	Loss of company and professional reputation	506	610	82.95	4
8	Diminution of respect between parties deterioration of relationship and breakdown in cooperation	450	610	73.77	6
9	Rework and relocation costs for men, equipment and materials	464	610	76.07	5

Source: (Field data, 2020)

From Table 4.8, the five most severe effects associated with conflicts as perceived the respondents are: (1) Loss of profitability and perhaps business viability (SI=93.28%), (2) Delays in project delivery (SI=90.00%), (3) Increasing project cost (SI=86.39%), (4) Loss of company and professional reputation (SI=82.95%), and (5) Rework and relocation costs

for men, equipment and materials (SI=76.07%). The least on the impact scale was Abandonment of projects leading to loss of valuable time and money (SI=57.21%).

4.4.7 Expert Opinion on Best Practises and Strategies for Improving Project Harmony Potential

This study sought the views of the respondents as a representation of the construction industry players regarding the best practises and strategies for improving project harmony potential through conflict management in construction projects. Respondents made 141 suggestions as the best practises and strategies for improving project harmony potential. The scripts or responses from the respondents were carefully reviewed and grouped into themes namely: project documentation, stakeholder involvement, value-based procurement, and ICT. The classification of the proposed practices was as follows: project documents, 33 (23%), stakeholder involvement, 35 (24%), value based procurement, 47 (33%), and ICT, 26 (18%).

a) Project Documentation

The researcher established 33 suggestions which could be grouped under project documents. These suggestions seemed to be addressing site interference conflicts as a result of inadequacy or errors in the project documents. Some of the proposed practices include: Adequate contract documentation devoid of errors and omission; putting in place a formal procedure for preventing and managing conflicts; Using simple tools such as site records and daily updates opposed to MS Project; clear specifications and definition of responsibilities in the contract documents; decisions at design stage to ensure proper planning and review of project plans and specifications; clear contract clauses; well spelt, clear and improved communication channels; definition of control parameters.

b) Stakeholder involvement

The following suggestions were made by respondents as best practises for improved project harmony potential under stakeholder involvement: Stakeholder involvement at the

early stages of the project; embracing consultation, teamwork and high level of interaction during project execution; having all consultants in the partnering; Proper coordination between the designers and implementers; integration of all levels of project participants in conflict management; a commitment to a win-win attitude; discover professional and personal goals of team members; a willingness to share resources among project participants; giving timely praise and recognition and awards; Establishment of sense of trust and collective responsibilities.

c) Value Based Procurement

A number of suggestions listed by the respondents were grouped under value based procurement. Value-based procurement focuses on procurement decisions based on delivery outcome that reduces the total cost of the project rather than focusing exclusively at the lowest price possible. These included risk establishment and mitigation; planning, monitoring and evaluation; Strategic management and operating styles; Strategic planning of resources; scoping with a value perspective; application of compromise; endorsing project and program management processes; Training of project managers to acquire essential skills in developing strategies and operating styles; Employment of trained qualified Construction Managers to run sites; continuous industry benchmarking; Ensuring involvement of qualified professionals in the project delivery process who appreciate the importance of conflict management; redefining procurement process approach from cost-based to value-based; Operational workshops and contractual terms to replace non-performing firms; establish of appropriate mechanisms for early identification of potential conflict issues; stakeholder training in performance management.

d) ICT

Factors related to ICT included: BIM support in decision making; increased ICT compliance; Employment of skilled workers with ability to use PM tools such as MS project; adaption of new technology in construction,

4.5 Describing Significant Factors that Influence Harmony Potential in Construction Projects

The third objective of this study aimed at describing determinant factors of project harmony potential by their influence on conflict management on construction projects. This was achieved through an extensive literature review where ten determinants were identified. Table 4.9 shows descriptive statistics for the ten performance determinants of different projects namely: Delay management, Project suitability by environment, Project team partnering orientation, Direct provisions for conflict management in the Project Handbook, Promptness of Monitoring and Evaluation work, Technical opinions/Approaches, CPM technical experience, Expertise of the CPM on psychology and criminology, Clear communication plan and Personality management.

The findings show that delay management had a mean of 3.07 and a standard deviation of 0.88, implying that a good management of site operations against interference by delay cause factors of the developer, contractor, consultants, material and equipment supplier. Project suitability by environment had a mean of 3.44 and a standard deviation of 0.72, meaning there was little interference of site operations by factors of project environment namely; construction regulatory bodies and the local population, project political environmental forces and weather factors. Project team partnering orientation had a mean of 3.72 and a standard deviation of 0.90, implying a success in the partnering orientation by the project team in attaining the project goals and objectives.

Direct provisions for conflict management in the Project Handbook had a mean of 4.17 and a standard deviation of 0.64, meaning that the provisions of the PMBOK 5th edition in general performed very well in the management of conflicts during the project implementation. Promptness of Monitoring and Evaluation work had a mean of 4.44 and a standard deviation of 0.49, indicating that there was the availability of planned regular site inspection, regular update of work programme/schedule, and updates on drawings and specifications. Technical opinions had a mean of 3.99 and a standard deviation of 0.83, implying that the respondents had been involved in a similar project within the past 5 years

and that they had been given the opportunity to share their past experiences in conflict management many of the times. CPM technical experience had a mean of 2.90 and a standard deviation of 0.87 meaning that that on average the construction project manager had bachelor's degree with less than 5 years' experience or diploma with over 10 years' experience, Expertise of the CPM on psychology and criminology had a mean of 2.61 and a standard deviation of 0.88, indicating that the construction project manager had an average expertise on psychology and criminology. Clear communication plan had a mean of 3.68 and a standard deviation of 0.49, an indication that communication between the stakeholders had a very clear plan and that the level of communication was well above average. Finally, Personality management had a mean of 2.82 and a standard deviation of 0.78, indicating low control on personality diversity problems during the project implementation.

Table 4.9: A Summary of Determinants of Project Harmony Potential

	N	Minimum	Maximum	Mean	Std. Dev
Delay management	121	1.5	5.0	3.07	.881
Project suitability by environment	118	2.0	5.0	3.44	.724
Project team partnering orientation	121	1.5	5.0	3.72	.903
Direct provisions for conflict management in the Project Handbook	120	3.0	5.0	4.17	.640
Promptness of Monitoring and Evaluation work	122	3.5	5.0	4.44	.488
Technical opinions/Approaches	120	2.0	5.0	3.99	.828
CPM technical experience	119	1.0	4.5	2.90	.872
Expertise of the CPM on psychology and criminology	122	1.0	4.5	2.61	.883
Clear communication plan	114	3.0	4.5	3.68	.494
Personality management	119	1.0	4.5	2.82	.778

Source: (Field data, 2020)

4.6 Relationship between Project Harmony Potential and its Influencing Factors

The fourth objective aimed at explaining the relationship between project harmony potential and its determinant factors. The study used Pearson's correlation and stepwise linear regression analysis to determine whether there exists a relationship between the project harmony potential and the independent variables factored in the conceptual framework.

4.6.1 Correlation analysis

Bivariate Pearson's correlation analysis was used in this study to determine the strength, significance and direction of the relationship between project harmony potential, delay management, project suitability by environment, project team partnering orientation, direct provisions for conflict management in the Project Handbook, promptness of Monitoring and Evaluation work, CPM technical experience, technical opinions/Approaches, expertise of the CPM on psychology and criminology, communication plan and personality management. According to Kothari (2004), an absolute Pearson's correlation value of 0.5 indicates a strong linear relationship between variables while a value below 0.5 indicates a weak linear relationship between the variables of interest. The sign of the correlation coefficient value indicates the direction of the relationship. Finally, the resultant p-value less than 0.05 at 95% confidence level indicates that the linear relationship between variables of interest is statistically significant.

Research findings in Table 4.10 indicates that there was a strong positive linear and statistically significant relationship between promptness of Monitoring and Evaluation work (X_5) and Project harmony potential (Y) as explained by Pearson's correlation coefficients (r) and p-values (p) of $r = 0.729$; $p\text{-value} < 0.001$), direct provisions for conflict management in the Project Handbook (X_4) and Project harmony potential (Y), $r = 0.693$; $p\text{-value} < 0.001$, and CPM technical experience (X_6) and Project harmony potential (Y), $r = 0.503$; $p\text{-value} < 0.001$. There was a positive and significant relationship

between clear communication plan (X_9) and project harmony potential (Y) as evidenced by $r = 0.338$; $p\text{-value} = 0.001$. There was also a positive and significant relationship between project team partnering orientation (X_3) and project harmony potential (Y), $r = .279$; $P\text{-value} = 0.006$, Delay management (X_1) and Project harmony potential (Y), $r = 0.235$; $p\text{-value} = 0.021$, Project suitability by environment (X_2) and Project harmony potential (Y), $r = 0.222$; $p\text{-value} = 0.033$. Finally, expertise of the CPM on psychology and criminology (X_8), technical opinions (X_7), and Personality management (X_{10}) were found to have a statistically insignificant linear relationship with project harmony potential (Y) as indicated by insignificant p-values ($P\text{-value} > 0.05$).

Table 4.10: Pearson's Correlation Coefficient between the Project Harmony Potential and the Various Determinants

		Y	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀
Y	<i>r</i>	1	.235*	.222*	.279**	.693**	.729**	.503**	.182	.044	.338**	.119
	<i>p</i>		.021	.033	.006	.000	.000	.000	.079	.671	.001	.254
	<i>N</i>		96	93	96	95	97	95	94	97	97	94
X ₁	<i>r</i>		1	.241**	.169	.189*	.073	.225*	.166	.059	.075	.158
	<i>p</i>			.009	.064	.039	.428	.014	.072	.519	.432	.087
	<i>N</i>			117	120	119	121	119	118	121	113	118
X ₂	<i>r</i>			1	.254**	.269**	.169	.283**	.076	.136	.035	.105
	<i>p</i>				.006	.004	.067	.002	.420	.141	.714	.263
	<i>N</i>				117	116	118	116	115	118	110	115
X ₃	<i>r</i>				1	.168	.128	.244**	.022	.159	.020	.189*
	<i>p</i>					.068	.162	.008	.812	.081	.849	.040
	<i>N</i>					119	121	119	118	121	113	119
X ₄	<i>r</i>					1	.608**	.281**	.241**	.038	.306**	.038
	<i>p</i>						.000	.002	.009	.679	.001	.682
	<i>N</i>						120	118	118	120	112	117
X ₅	<i>r</i>						1	.352**	.175	.090	.325**	.055
	<i>p</i>							.000	.057	.326	.000	.553
	<i>N</i>							120	119	122	114	119
X ₆	<i>r</i>							1	.074	.010	.218*	.193*
	<i>p</i>								.430	.912	.021	.036
	<i>N</i>								117	120	112	118
X ₇	<i>r</i>								1	.100	.193*	.116
	<i>p</i>									.279	.043	.214
	<i>N</i>									119	111	117
X ₈	<i>r</i>									1	.081	.653**
	<i>p</i>										.395	.000
	<i>N</i>										114	119
X ₉	<i>r</i>										1	.062
	<i>p</i>											.518
	<i>N</i>											111
X ₁₀	<i>r</i>											1
	<i>p</i>											
	<i>N</i>											

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Notes: *p* refers to the *p*-value

r is the Pearson's correlation coefficient

*Means $p < 0.05$

Source: (Author, 2020)

From table 4.10, Y = Project harmony potential

X₁ = Delay management

X₂ = Project suitability by environment

X₃ = Project team partnering orientation

X₄ = Direct provisions for conflict management in the Project Handbook

X₅ = Promptness of Monitoring and Evaluation work

X₆ = CPM technical experience

X₇ = Technical opinions/Approaches

X₈ = Expertise of the CPM on psychology and criminology

X₉ = Clear communication plan

X₁₀ = Personality management

4.6.2 Confirmation of Assumptions of Parametric Test

a) Normality Test for the Dependent Variable

Linear regression analysis assumes that the dependent variable and the residuals should assume normality. The study conducted the normality test of the dependent variable and the residuals. First the dependent variable, the project harmony potential was subjected to Shapiro Wilk's tests of normality. The findings revealed in Table 4.11 and Figure 4.8 showed that there was no violation of the normality assumption as indicated by an insignificant p value, p=0.305, at 5% level of significance.

Table 4.11: Tests of Normality for the Project Harmony Potential

	Shapiro-Wilk		
	Statistic	df	Sig.
Project Harmony potential	.984	97	.272

Source: (Author, 2020)

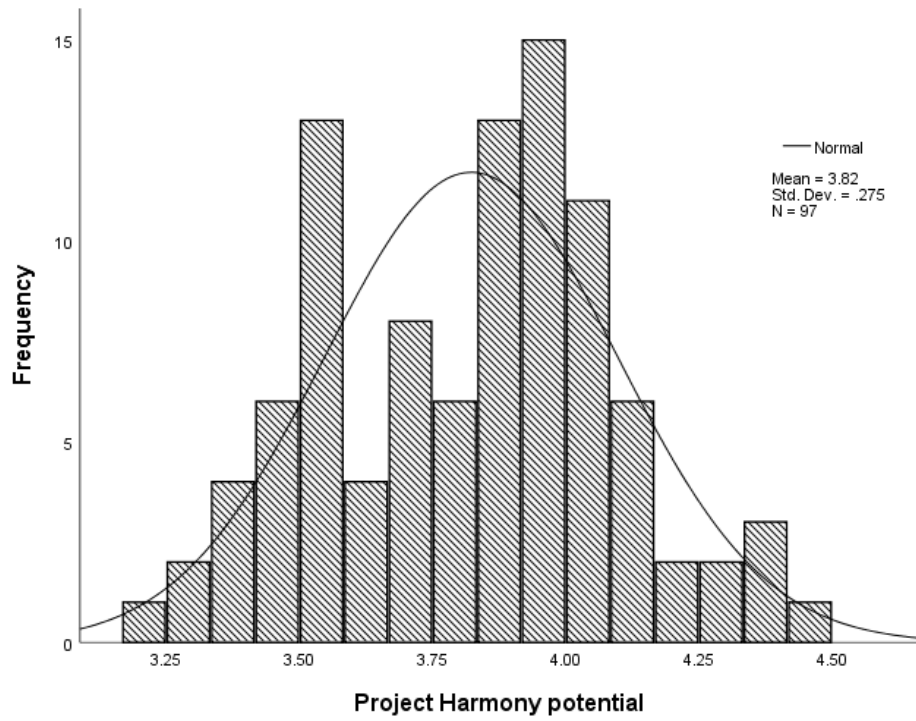


Figure 4.8: A Histogram and a Normality Plot for Project Harmony Potential

Source: (Author, 2020)

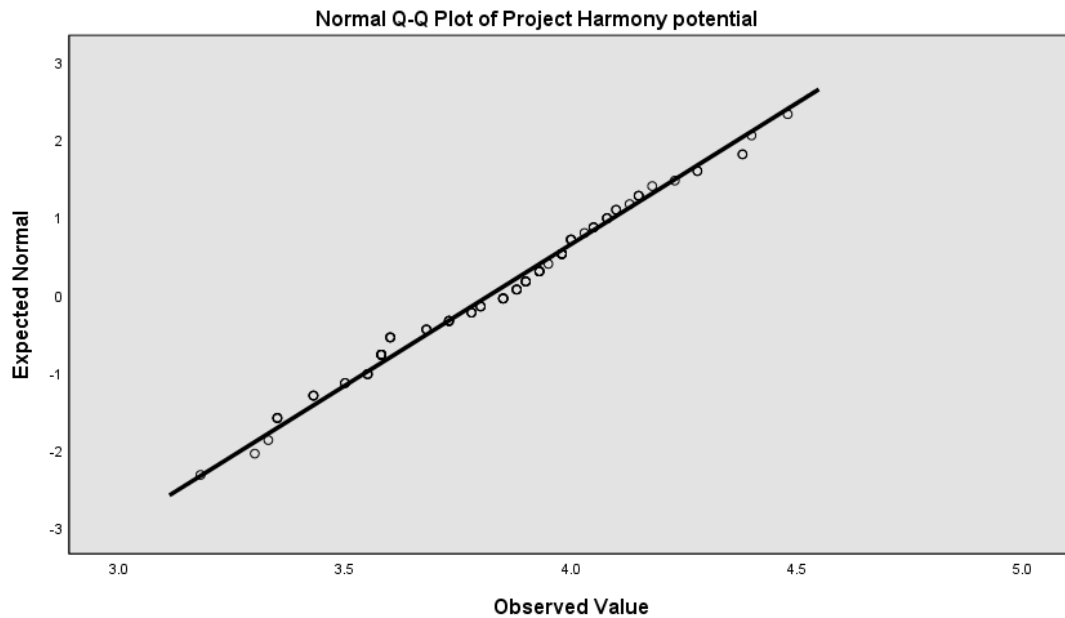


Figure 4.9: A normal Q-Q Plot of Project Harmony Potential

Source: (Author, 2020)

Secondly, the residuals were tested using a normal probability plot. If all the values tend to lie on the straight line cutting across the diagonal, then the residuals are assumed to be normally distributed. Research findings in Figure 4.10 show that the points tend to lie on the diagonal line indicating that there was no violation of normality assumption.

Normal P-P Plot of Regression Standardized Residual

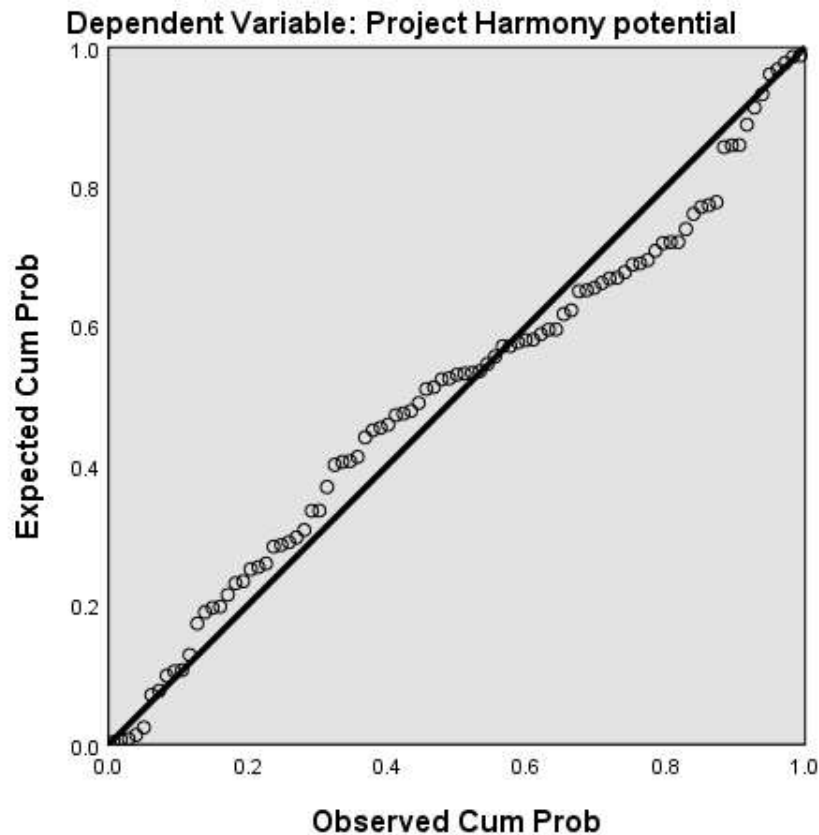


Figure 4.10: Normal P-P Plot of Regression Standardized Residue

Source: (Author, 2020)

a) Normality test for the residuals

Normality assumptions for residual terms explains that the error terms should be normally distributed or follows a normal distribution. This means that the mean, mode and median values all lie on the same point. This assumption was tested using Kolmogorov Smirnov and Shapiro Wilk test of normality. The null hypothesis of the normality tests states that the residuals are normally distributed. This is indicated by an insignificant p-value at a given significance level. A normal Q-Q plot was also used and the results presented in Table 4.12.

Table 4.12: Normality Test for the Residuals

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.102	85	.058	.957	85	.106

a. Lilliefors Significance Correction

Source: (Author, 2020)

The results showed that the residuals were normally distributed as indicated by p-values of 0.058 in Kolmogorov Smirnov test and 0.106 in Shapiro Wilk test. Therefore, the null hypothesis was not rejected concluding that there was no violation of the assumption as the residuals were normally distributed. This was also confirmed in Figure 4.11 where the data values seemed to lie along the diagonal line

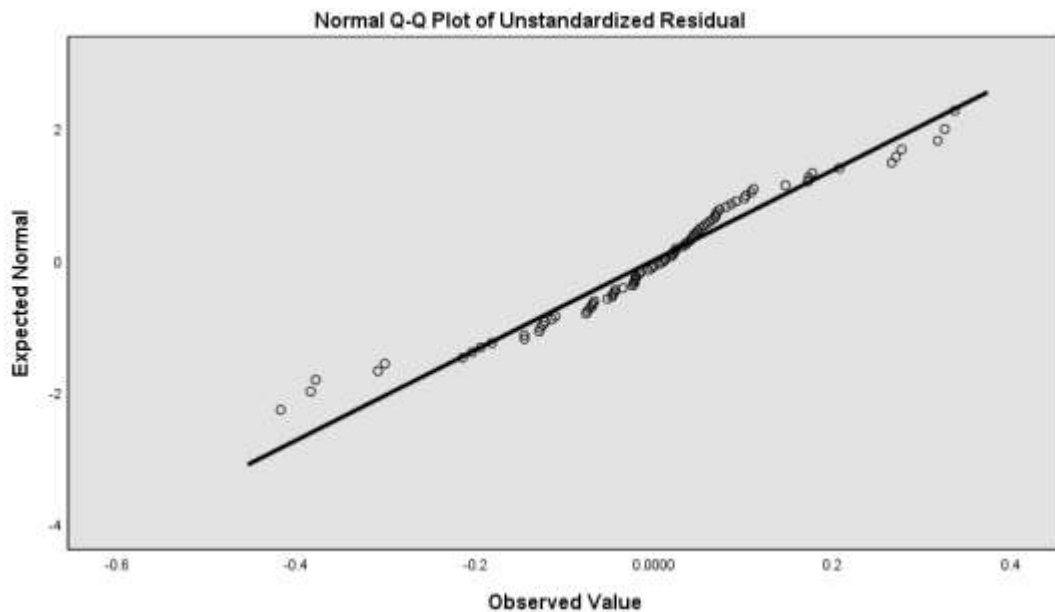


Figure 4.11: A Normal Q-Q Plot of Residuals Unstandardized Residue

Source: (Author, 2020)

b) Linearity Test

Linearity refers to the consistent slope of change that represents the relationship between an independent variable and a dependent variable. There are several ways of testing for linearity. The test most commonly used is the deviation from linearity test. If the significant value for deviation from linearity is less than 0.05, the relationship between independent and dependent variables is non-linear. This has already been done in correlation analysis, and thus linearity of variables is assumed in this case.

c) Homoscedasticity

Homoscedasticity refers to the constancy of variance. In regression analysis, the error terms are assumed to be the same across all values of the independent variables. A residual scatter plot for predicted scores and standardized residual values also known as errors of prediction was used to test for homoscedasticity. This assumption is met if the scores are concentrated about the 0 point and distributed in a rectangular pattern, or the scores are randomly scattered about a horizontal line. According to the findings in the plot in Figure 4.12 below, the scores appear to be evenly distributed and concentrate about the horizontal line. This indicates that the homoscedasticity assumption was not violated.

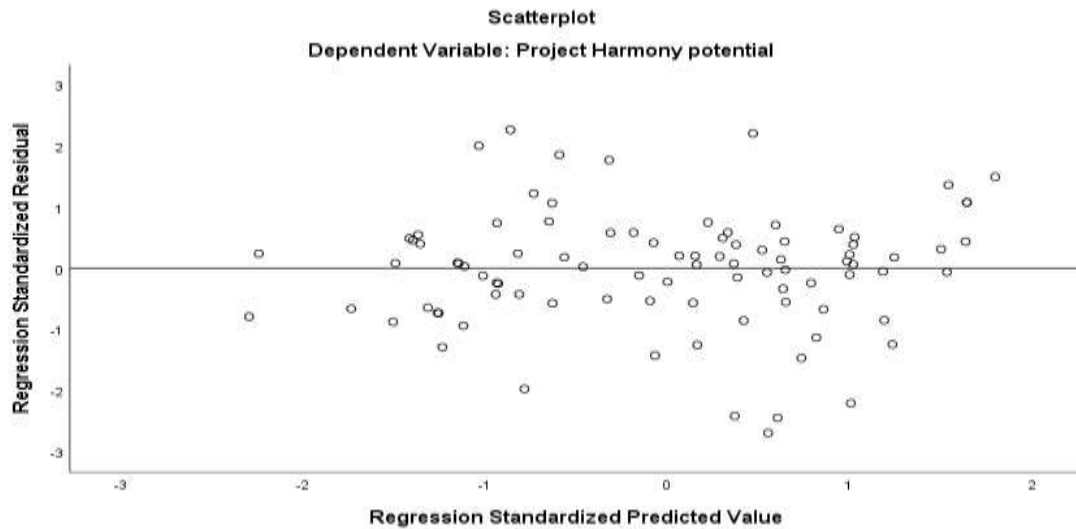


Figure 4.12: Scatter plot for Predicted Values and Residual of the Project Harmony Potential

Source: (Author, 2020)

d) Multicollinearity

Multicollinearity means a strong correlation between the predictor variables. Parametric tests like regression analysis assume that there should not be a strong correlation between the independent variables. Variance Inflation Factors (VIF) and tolerance values were used to test for multicollinearity. According to Belsley, et al. (2004) in (Shalabh et al., 2007), a tolerance with a value close to 1 means there is little multicollinearity, whereas a value close to 0 suggests that multicollinearity exists, while a VIF of more than 10 ($VIF \geq 10$) indicates a problem of multicollinearity. Again, Pearson's correlation analysis among the independent variables is used to examine multicollinearity. A Pearson's correlation coefficient value of 0.9 and above is considered to indicate the presence of multicollinearity.

According to the research findings on Table 4.13, there was no multicollinearity since the average VIF values were less than 10, and tolerance values were closer to 1, greater than

0.2. Again, the Pearson's correlation coefficients on Table 4.13 were found to be less than 0.9 indicating absence of multicollinearity. Therefore, it can be concluded that there the no multicollinearity assumption was not violated.

Table 4.13: Multicollinearity Test

Variable	Tolerance	VIF
Delay management	.774	1.292
Project suitability by environment	.773	1.293
Project team partnering orientation	.811	1.233
Direct provisions of conflict management in the Project Handbook	.464	2.157
Promptness of Monitoring and Evaluation	.513	1.950
CPM Technical experience	.719	1.392
Technical opinions	.864	1.158
Expertise of the CPM on psychology and criminology	.442	2.264
Communication plan	.882	1.134
Personality Management	.436	2.294

Source: (Author, 2020)

According to (Osborne et. al., 2002), if these assumptions are not met, the results tend not to be valid and may result to Type I error, Type II error, over-estimation or under-estimation of significance. Therefore, having confirmed that there was no violation of the assumptions made by the tests, the findings were then taken to be valid.

4.6.3 Regression Analysis

This is a measure of the ability of independent variables to predict an outcome of a dependent variable where there is a linear relationship between them. This study used regression analysis to establish whether independent variables predict the dependent variable. A Stepwise regression was conducted with the Project harmony potential (Y) as the dependent variable and Delay management (X₁), Project suitability by environment (X₂), Project team partnering orientation (X₃), Direct provisions for conflict management in the Project Handbook (X₄), Promptness of Monitoring and Evaluation work (X₅), CPM technical experience (X₆), Technical opinions/Approaches (X₇), Expertise of the CPM on

psychology and criminology (X_8), Clear communication plan (X_9), and Personality management (X_{10}) as the independent variables. An optimal model was established with only the significant variables and a coefficient of determination (R^2) value of 0.691 meaning that the variables explained 69.1% of the project harmony potential.

Stepwise regression is defined by Okaka (2019) to be an automatic computational method of attempts to use only statistically relevant predictors from a large set of hypothetical predictive variables to find the "best" multiple regression model. In his research, Okaka (2019) used this method successfully to derive a predictive model of measuring a project's performance level. Addition of predictor or independent variables to the model in each step is based on a pre-specified criterion. In this case, the adjusted coefficient of determination (R^2) criterion was used.

The results on Table 4.14 presents stepwise regression analysis. The independent variables were selected and presented based on their significance in the model predicting project performance level.

Table 4. 2: Linear Regression Analysis

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R^2	F
		B	Std. Error	Beta				
1	(Constant)	2.016	.191		10.528	.000	.518	91.248
	Promptness of Monitoring and Evaluation	.412	.043	.724	9.552	.000		(0.001)
2	(Constant)	1.953	.175		11.132	.000	.598	63.554
	Promptness of Monitoring and Evaluation	.271	.052	.476	5.231	.000		
	Direct provisions of conflict management in the Project Handbook	.164	.039	.382	4.196	.000		
3	(Constant)	1.807	.169		10.709	.000	.649	52.849
	Promptness of Monitoring and Evaluation	.250	.049	.438	5.117	.000		(0.001)
	Direct provisions of conflict management in the Project Handbook	.142	.037	.332	3.851	.000		
	CPM Technical experience	.081	.023	.246	3.597	.001		
4	(Constant)	1.692	.174		9.732	.000	.664	42.524

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R ²	F
	B	Std. Error	Beta				
5	Promptness of Monitoring and Evaluation	.276	.049	.485	5.600	.000	(0.001)
	Direct provisions of conflict management in the Project Handbook	.116	.038	.270	3.033	.003	
	CPM Technical experience	.073	.022	.221	3.253	.002	
	Delay management	.048	.022	.146	2.137	.036	
	(Constant)	1.503	.193		7.780	.000	.677 36.263
6	Promptness of Monitoring and Evaluation	.261	.049	.458	5.333	.000	(0.001)
	Direct provisions of conflict management in the Project Handbook	.112	.038	.260	2.972	.004	
	CPM Technical experience	.071	.022	.215	3.231	.002	
	Delay management	.045	.022	.139	2.067	.042	
	Communication plan	.078	.038	.134	2.066	.042	
	(Constant)	1.408	.194		7.240	.000	.691 32.290
	Promptness of Monitoring and Evaluation	.260	.048	.457	5.434	.000	(0.001)
	Direct provisions of conflict management in the Project Handbook	.110	.037	.257	3.004	.004	
	CPM Technical experience	.060	.022	.180	2.683	.009	
	Delay management	.041	.022	.125	1.885	.063	
	Communication plan	.085	.037	.146	2.291	.025	
Project team partnering orientation	.038	.018	.135	2.114	.038		

a. Dependent Variable: Project Harmony potential

Source: (Author, 2020)

The findings revealed that a total number of 6 variables were included in the optimal model. These are Delay management, Project team partnering orientation, direct provisions of conflict management in the Project Handbook, Promptness of Monitoring and Evaluation, CPM Technical experience and Clear communication plan. The model was found to be good in predicting the project harmony potential of a project, $F=32.290$; $p<0.001$, as captured on Table 4.14. Based on the information from Table 4.14 the optimal regression equation can be written as:

$$Y = 1.408 + 0.041X_1 + 0.038X_3 + 0.110X_4 + 0.260X_5 + 0.060X_6 + 0.085X_9$$

Where, Y – Project harmony potential

X₁ - Delay management

X₃ - Project team partnering orientation

X₄ - Direct provisions for conflict management in the Project Handbook

X₅ - Promptness of Monitoring and Evaluation work

X₆ - CPM technical experience

X₉ - Clear communication plan

From the results, the standardized coefficients showed the Independent variables with more impact on the dependent variable and it was found that Promptness of Monitoring and Evaluation (0.457) had more effect on project harmony potential followed by Direct provisions of conflict management in the Project Handbook (0.257), followed by CPM Technical experience (0.180), followed by Clear Communication plan (0.146), followed by Project team partnering orientation (0.135), and finally Delay management (0.125).

The constant term was found to be 1.408. This implied that holding all other factors constant, project harmony potential increases by 1.408 units.

The t-test value of 7.240 indicates that the coefficient for the variable is statistically significant at a high level of confidence (typically $p < 0.05$ or $p < 0.01$). This means that there is strong evidence to suggest that the independent variable has a significant impact on the dependent variable in the regression model. The F-test is used to assess the overall significance of the regression model as a whole. An F-test value of 32.290 indicates that the regression model is statistically significant, suggesting that the predictor variable(s) included in the model explain a significant proportion of the variability in the dependent variable. This implies that the model provides a good fit to the data and that the independent variable(s) collectively contribute significantly to explaining the variability in the dependent variable. The respective t-test values for the six predictor variables indicate that the variables significantly predict the dependent variable in the model. Each individual predictor variable makes a statistically significant contribution to the prediction, as indicated by their respective t-test values.

4.6.4 Model summary

The model revealed that there was a significant positive linear relationship between the project's harmony potential and Delay management, Project team partnering orientation, direct provisions of conflict management in the Project Handbook, Promptness of Monitoring and Evaluation, CPM Technical experience and Clear Communication plan: a unit increase in the Promptness of Monitoring and Evaluation increases the level of Project harmony potential by 0.260 units; a unit increase in the Direct provisions of conflict management in the Project Handbook increases project harmony potential by 0.110 units; a unit increase in the CPM Technical experience increases project harmony potential by 0.060 units; a unit increase in Delay management increases project harmony potential by 0.041 units; a unit increase in the Communication plan increases project harmony potential by 0.085 units; and, a unit increase in Project team partnering orientation increases project harmony potential by 0.038 units.

4.7 Schematic Framework for Managing Conflicts in Construction Project.

The main objective aimed at developing a regression model for evaluating project harmony potential of construction projects in Kenya.

4.7.1 Rationale for the Framework

Individual and organizational defensive routines impede effective conflict management process. A synthesized framework for managing conflicts has been presented in Figure. 1.13. The framework comprises of three major phases namely; Diagnosis, Monitoring and intervention, and outcome review. A number of activities should be undertaken at each of those stages.

a) Diagnosis Phase

The purpose of diagnosis is to identify conflict within an organization and confirm that participants are using a suitable conflict resolution technique (Kingsley, 2015). Diagnosis

entails measurement of conflict, source analysis, and examination of the correlations between conflict intensity and organizational efficacy. The diagnosis findings ought to specify the kind of intervention to use and whether conflict management is required. Even when some of the participants individually overcome their defensive reactions, mostly the general organizational routines will not permit them to formulate the real risk areas that eventually lead into conflicts. Stakeholders dissenting to these routines, practices, old policies and procedures soften become the 'bad guys' hence distorting the conflict formulation process. This could end up on concentrating on the wrong problem altogether instead of putting effort on the conflict area. This strategy puts great focus on sensing the risk areas, insuring that it's the correct conflict area before working on a plan to manage it, through critical thinking and conflict formulation. This include a number of factors which should be considered if the project objectives of a harmonious project are to be attained.

The first consideration would be top management support. Change of organizational routine or behaviour was ranked as one of strategies to attaining a greater project harmony potential through conflict management. French and Bell (1999) in Mutungi (2018) suggest that transformational leadership on an organization culture requires a lot of support from the top management.

The second factor to be considered in this stage would be the technical capacity. Technical incompetency was considered a major challenge in conflict formulation and therefore conflict management. Most of the conflicts established from Table 4.6 implicated technical incompetence and lack of skills as the main cause for all conflict cause groups considered (Clients/ developers, consultants, contractors, and material and equipment suppliers). The study established three most prevalent areas to consider under technical capacity namely; academic qualifications, training and experience in conflict management, ability to use BIM and project management tools. This to be successful, the right stakeholders have to be selected into the project. Therefore, before commencement of the project the project management should ensure that that they have personnel who have considerable experience on similar nature of projects, academically qualified,

properly trained, and who can challenge their views objectively without necessarily always sharing same opinions.

The third factor to be considered in this stage is measurement and analysis. A comprehensive diagnosis should involve assessment of the amount of personal and substantive conflict at the interpersonal, intragroup and intergroup levels and their sources, and an analysis of relations among them. The results should enable the project managers identify the problems of conflict, if any, and draw the best type of intervention necessary for managing the conflicts.

The last factor to be considered in this stage is project documentation. As seen on Table 4. 6, most respondents observed that lack of proper documentation is likely to lead to interference with site operations and hence conflicts, due to delays in revision, claims and variations, suspensions of works, rework, among other factors. (Tabish, S. & Jha, 2011) observed that proper documentation of a project had a positive relationship with the project performance. Most of the conflicts as a result of project documentation could be avoided if the documents are well detailed and clearly understood at the early stages of project execution as seen on Table 4.6. Consequently, the objective of diagnosis is to identify the root causes and consequences of organizational conflict in an explicit manner.

b) Monitoring and Intervention

Intervention becomes a necessity if there is insufficient or excessive conflict, or if the conflict is not resolved successfully (Kingsley, 2015). The intervention plan takes shape depending on whether there is too much of personal conflict, or too little or too much substantive conflict, and/or the stakeholders are not handling their conflict effectively. This is more so determined by the measure and analysis during diagnosis of conflicts, and therefore, successful diagnosis gives an indication of the need for intervention and the type of intervention required. An accurate diagnosis ought to provide a clear indication of the course of action to take. Generally speaking, there are two fundamental ways to resolve a conflict: human behavior and organizational structure.

The behavioral structure modifies members' attitudes, values, norms, beliefs, and other aspects of their culture in an effort to increase organizational success. The goal of behavioral interventions is to support organizational members in utilizing suitable conflict resolution behaviors in order to identify the "true" sources of conflict and arrive at workable solutions for management procedures (Yu & Leung, 2001).

The goal of structural intervention is to alter the organizational structure in order to resolve the conflict. It consists of processes, incentive systems, hierarchy, and methods for differentiation and integration. An successful organization's structural layout should match the environment, technology, and task characteristics. The more these elements line up, the more successfully conflict may be managed. All organizational structures do not, however, have an ideal structural design. It is true that changing the industry's intricate organizational structure and matrix is challenging.

Conflicts within the project organization must not necessarily be reduced, suppressed or eliminated, but managed to increase productivity and enhance the organizational learning. Once the intervention plan has been established and the design structure enforcing action plan. This is through reduction of the personal or affective conflicts, maintaining a moderate amount of substantive conflict in non-routine tasks at each level and enabling the project participants learn the various approaches of handling different situations of conflicts. The study identified six alternative approaches that can be used to manage conflicts namely: promptness of monitoring and evaluation; direct provisions in the project handbook; communication plan; CPM technical experience; delay management; project team partnering orientation. Decisions made in the process of managing conflicts should be both ethical and satisfactorily to the need and expectations of the various stakeholders.

c) Outcome Review

This is the last stage of the framework that involves consolidating the documented reports on conflict areas, management structure and lessons learnt documented for benchmarking

with other projects. Lessons learned are documented at this stage for use in preceding projects of similar nature.

d) The Model Overview

The construction industry operates on a project-based paradigm. In order to create a matrix organizational structure for the specific project, members of the construction team, including the project manager, architects, engineers, quantity surveyors, main contractors, and subcontractors, are selected from multiple organizations throughout the building cycle. Each project involves separate businesses that, in terms of the project, are organizationally linked. The demands of each project and each business might potentially clash as a result of this circumstance (Ntiyakunze, 2011). The demands of projects and the needs of individual enterprises may conflict. It is quite challenging to satisfy everyone's demands for the specific project. The study therefore develops a schematic framework for the construction sector that is based on behavioral conflict management (see Figure 4.13).

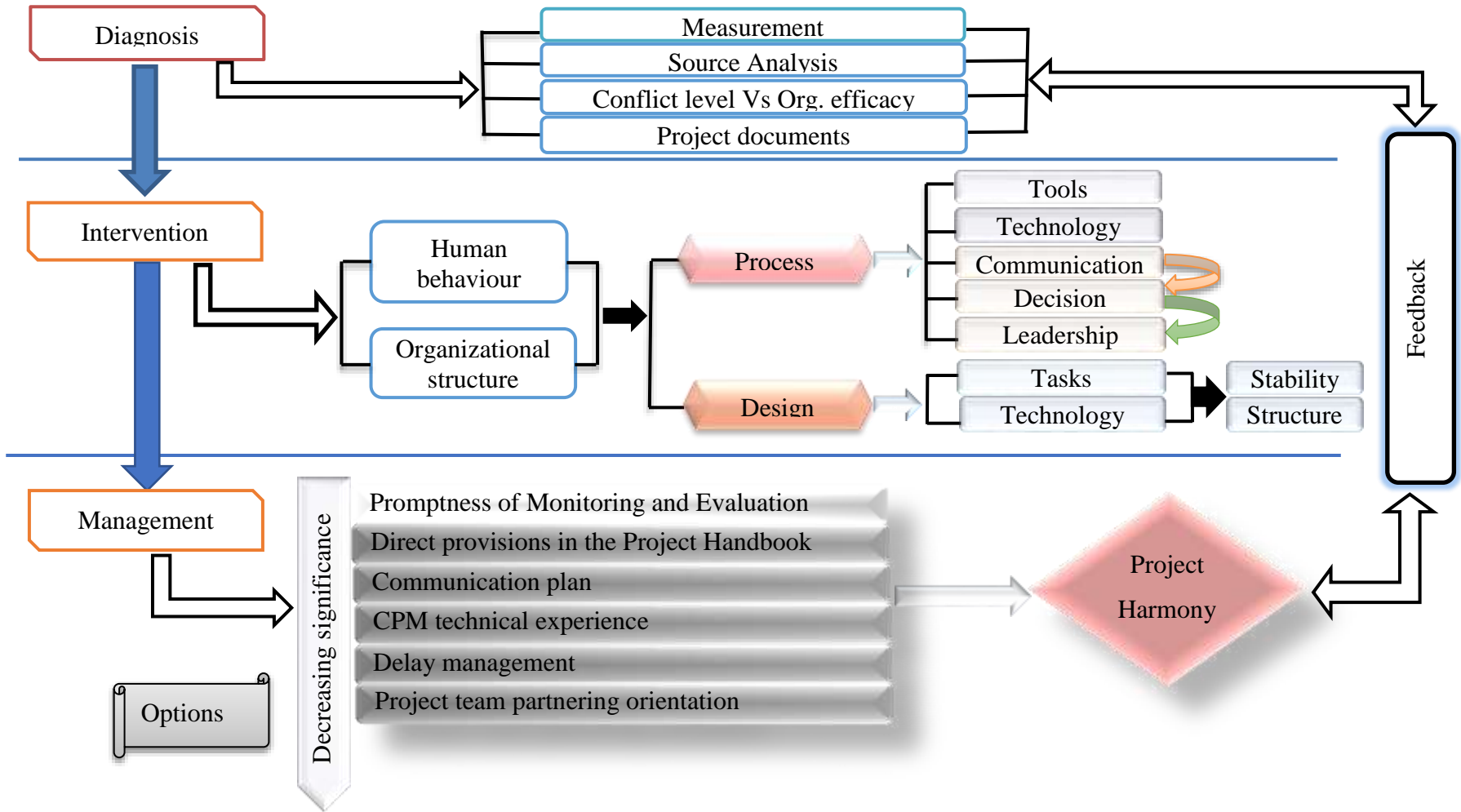


Figure 4.13: Schematic Framework for Managing Conflicts in Construction Project

Source: Author, (2020)

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions, and recommendations. In summary of the findings, the results and remarks of each of the objectives are presented. The conclusions are guided by the research objectives and informed by the findings from data analysis and interpretation in the study. Recommendations for policy implications drawn in relation to the study outcome as well as areas for further research are also included.

5.2 Summary of the Findings

5.2.1 Objective 1: Description of Project Harmony Potential for Construction Projects in Kenya

From the literature review, the study identified nine (9) criterion variables of project harmony potential, namely: the time is taken to complete a project, the cost of the project, quality of the project, involvement of stakeholders during the project implementation, environmental impact, safety, mutual trust and user satisfaction. The indicators were then combined to form one overall variable, the project harmony potential (Y).

Descriptive statistics for the indicators as well as the project harmony potential were obtained and presented in Table 4.3. From the findings, the harmony potential for all the projects was found to be successful on average. Similarly, breaking the project harmony potential, cost performance was found to be within the range of success meaning that majority of the projects were executed within the planned budget allocation. Time performance was found to fall below average meaning that majority of the projects fairly finished within the allocated time. The quality, stakeholder

involvement, environmental impact, safety, mutual trust, and user satisfaction were found to be satisfactory, indicating that projects performed well on average.

5.2.2 Objective 2: The practice of conflict management in construction projects

The second objective of this study was to understand the current practice of conflict management in construction projects in Kenya. To do this, the research studied six areas namely; the rate of interference of project site operations by dysfunctional conflicts between participants, personnel bestowed with the responsibility of carrying out conflict management in the firm, the frequency of conflict resolution amongst selected groups of project participants, areas of conflict in construction projects, preference on conflict resolution approaches, the level of impacts associated with conflicts, and, expert opinion on other best practices and strategies that can be used in conflict management as recommended by the respondents.

Findings from Table 4.4 indicated the inevitability of conflicts in construction projects with a mean of 3.42 on the rate of site interference by conflicts. As seen in Figure 4.7, the responsibility for managing these conflicts was found to be vested on the project managers. Most of these conflicts were found to be between the design team and contractor, followed by conflicts between developer and contractor, with a mean a mean of 4.63 and 4.31 as indicated on Table 4.6. Other groups under study, from the group with high conflict occurrence to least conflict occurrence were design team and developer, mean of 3.58, developer and material supplier, and contractor and sub-contractor, with a mean of 2.69 and 2.29 respectively.

The study asked the respondents to provide sources of conflicts attributed to identified groups of participants namely; developers, contractors, consultants, and material and equipment suppliers, that had led to interference with site operations. Findings from table 4.6 indicated that conflicts can result from either of the stakeholders, with contractors having the largest contribution followed by consultants, material and equipment supplier, and clients in a decreasing order. From the table 4.6, the highest contributor of delay conflict is "Delay in progress payments" by the client with a mean

of 38.41. The second factor is "Poor site management and supervision" by contractor which has a mean of 36.05. In the third place, the factor "Difficulties in financing project" by the contractor followed in the fourth place by the factor "Poor qualification of the contractor's technical staff" with a mean of 35.26 and 33.81 respectively. The fifth factor is "Ineffective planning and scheduling of project" by the contractor" which has an importance index of 32.17. The least factor in the list is "Accidents during construction" by contractors with a mean of 10.33.

The respondents were asked to rate the impact of conflicts that had been identified through literature review. The results were ranked using the Relative severity index (RSI) to indicate the level of impact. From Table 4.6, the five most severe effects associated with conflicts as perceived the respondents are: (1) Loss of profitability and perhaps business viability (SI=93.28%), (2) Delays in project delivery (SI=90.00%), (3) Increasing project cost (SI=86.39%), (4) Loss of company and professional reputation (SI=82.95%), and (5) Rework and relocation costs for men, equipment and materials (SI=76.07%). The least on the impact scale was Abandonment of projects leading to loss of valuable time and money (SI=57.21%).

Lastly, the study sought the views of the respondents as a representation of the construction industry players regarding the best practices and strategies for improving project harmony potential. A careful review grouped the responses into four themes namely; project documentation, stakeholder involvement, value based procurement, and ICT. These have been discussed in depth in section 4.6.7 of the study.

5.2.3 Objective 3: Description of Significant Factors of Harmony Potential for the Construction Projects

The third objective of this study was to describe significant factors that influence harmony potential in construction projects. From the literature review, ten (10) predictor variables of project harmony potential (Y) were identified, namely: delay management, project suitability by environment, project team partnering orientation, direct provisions for conflict management in the Project Handbook, promptness of

Monitoring and Evaluation work, technical opinions/Approaches, CPM technical experience, expertise of the CPM on psychology and criminology, clear communication plan and personality management. Table 4.5 provided a summary descriptive statistics for these determinants.

The findings revealed that management of site operations against interference by delay cause factors of the developer, contractor, consultants, and material and equipment supplier was good. On project suitability by environment, there was little interference of site operations by factors of project environment namely; construction regulatory bodies and the local population, project political environmental forces and weather factors. On project team partnering orientation, findings revealed that the partnering orientation by the project team in attaining the project goals and objectives was successful. The findings also revealed that the direct provisions for conflict management in the PMBOK 5th edition in general performed very well in the management of conflicts during the project implementation. On promptness of Monitoring and Evaluation work, it was found that there was the availability of planned regular site inspection, regular update of work programme/schedule, and updates on drawings and specifications. On technical opinions, the findings showed that the respondents had been involved in a similar project within the past 5 years and that they had been given the opportunity to share their past experiences in conflict management many of the times. On CPM technical experience, findings revealed that the CPM competency was good, and that on average all the construction project manager had bachelor's degree with less than 5 years' experience or diploma with over 10 years' experience. On the expertise of the CPM on psychology and criminology, it was found that all the construction project manager had an average expertise on psychology and criminology. The findings also revealed that there was a very clear communication plan between the project stakeholders, and that the level of communication between the project stakeholders was well above average. Finally, on personality management, findings indicated low control on personality diversity problems during the project implementation.

5.2.4 Objective 4: Explanation of the Relationship between Project Harmony Potential and Its Determinant Factors

The fourth objective of this study was to explain the relationship between project harmony potential and its determinant factors. The findings are explained here below.

5.2.4.1 Pearson's correlation

Pearson's correlation was used to determine the strength, significance and direction of the relationship between project harmony potential and the predictor variables namely; delay management, project suitability by environment, project team partnering orientation, direct provisions for conflict management in the Project Handbook, promptness of Monitoring and Evaluation work, CPM technical experience, technical opinions/Approaches, expertise of the CPM on psychology and criminology, communication plan and personality management.

Research findings in Table 4.11 indicates that there was a strong positive linear and statistically significant relationship between project harmony potential and each of the following variables; promptness of Monitoring and Evaluation work, direct provisions for conflict management in the Project Handbook, and CPM technical experience. There was a positive and significant relationship between project harmony potential and each of the following variables; clear communication plan, project team partnering orientation, delay management, and project suitability by environment. Finally, there was a statistically insignificant linear relationship between project harmony potential and each of the following variables; expertise of the CPM on psychology and criminology, technical opinions, and personality management.

5.2.4.2 Regression model

The study used stepwise regression with the project harmony potential (Y) as the dependent variable and delay management, project suitability by environment, project team partnering orientation, direct provisions for conflict management in the Project Handbook, promptness of Monitoring and Evaluation work, technical

opinions/Approaches, CPM technical experience, expertise of the CPM on psychology and criminology, clear communication plan and personality management as the influencing factors to develop an optimal model with significant factors. The model developed as follows:

$$Y = 1.408 + 0.041X_1 + 0.038X_3 + 0.110X_4 + 0.260X_5 + 0.060X_6 + 0.085X_9$$

Where, Y – Project harmony potential

X₁ - Delay management

X₃ - Project team partnering orientation

X₄ - Direct provisions for conflict management in the Project Handbook

X₅ - Promptness of Monitoring and Evaluation work

X₆ - CPM technical experience

X₉ - Clear communication plan

The model revealed that there was a significant positive linear relationship between the project's harmony potential and Delay management, Project team partnering orientation, direct provisions of conflict management in the Project Handbook, Promptness of Monitoring and Evaluation, CPM Technical experience and Clear Communication plan: a unit increase in the Promptness of Monitoring and Evaluation increases the level of Project harmony potential by 0.260 units; a unit increase in the Direct provisions of conflict management in the Project Handbook increases project harmony potential by 0.110 units; a unit increase in the CPM Technical experience increases project harmony potential by 0.060 units; a unit increase in Delay management increases project harmony potential by 0.041 units; a unit increase in the Communication plan increases project harmony potential by 0.085 units; and, a unit increase in Project team partnering orientation increases project harmony potential by 0.038 units.

5.2.5 Schematic Framework for Managing Conflicts in Construction Projects

The Main objective sought to formulate a framework for managing conflicts in construction projects in Kenya. The findings from the first four objectives were used

to develop a schematic framework which can be adopted. The framework is phased into Three major stages namely; Diagnosis, monitoring and intervention, and feedback phase.

The first phase which is diagnosis involves the process of measurement of conflict, source analysis, and examination of the correlations between conflict intensity and organizational efficacy. The phase considers a number of factors important at this stage. Assessment of the amount personal and substantive conflict at the various levels of interactions, their sources and analysis is carried out to enable an intervention plan for the conflict areas.

The second phase has two stages namely; preparing intervention plans and recommending solutions to conflicts. Intervention becomes a necessity if there is insufficient or excessive conflict, or if the conflict is not resolved successfully. An action plan for intervention is designed by benchmarking, where the stakeholders brainstorm on case study projects of a similar nature to come up with the best concepts, techniques and tools for a based on the project objectives and goals before the commencement of the project. An accurate diagnosis ought to provide a clear indication of the course of action to take in handling different types of conflicts. Two fundamental ways of resolving conflicts are proposed under this phase namely; human structure which modifies members' attitudes, values, norms, beliefs, together with other aspects of their culture in an effort to increase the organizational harmony and structural intervention, which is a fundamental intervention to alter the organizational structure in order to resolve conflicts.

The hight of the intervention phase advocates for conflict management to increase productivity and enhance the organizational knowledge on the different options for conflict management, to satisfy the needs and expectations of the various stakeholders. Six alternative approaches that can be used to manage conflicts where identified for this phase: promptness of monitoring and evaluation; direct provisions in the project handbook; communication plan; CPM technical experience; delay management; project team partnering orientation. The final phase involves the feedback process for

the management outcome by consolidating reports and documents on conflict areas, management structure and lessons learned, which can be used in preceding projects.

5.2.6 Contribution of Study to Body of Knowledge

Conflicts in building projects have been cited by Kingsley (2015) as one of the variables subverting project success as they can be time depleting, costly and unpleasant in that they can destroy the relationship amongst the project participants and also add to the cost of the contract, bogging down and impeding the smooth implementation of projects. This study contributes to the research and practice community by covering the issues on which conflicts amongst participants in a project occur, the nature of the conflicts, the effects on building projects in Kenya, and best practises for effective management of these conflicts. The study features within the field of construction project management.

This study has achieved a framework for enhancing project harmony potential through effective conflict management in construction projects in Kenya. The study also established a model for predicting the efficacy of conflict management by evaluating the project harmony in construction projects in Kenya. The framework and the Model will inform personnel tasked with conflict management thereby improving the overall performance of the projects in Kenya by providing additional knowledge required by clients/developers, project managers, contractors, project consultants (architects, engineers, and quantity surveyors), and other stakeholders in the management of building projects. The model derived through regression provides the key areas of focus by the project management and policy makers in the construction industry if an increase in project harmony is to be realised, through improved management of conflicts. These areas include; policies that guide on management of delays caused by clients, contractors, consultants, and material and equipment suppliers, promptness of Monitoring, control and Evaluation, Technical experience of the Construction Project Manager, and having a clear communication plan. The synthesised framework

provides a theoretical plan for managing conflicts by diagnosing key risk areas, monitoring and providing an intervention plan for the management of conflicts and a feedback process by collecting reports and documentation on conflict areas, management structure, and lessons learned that can be applied to future projects.

5.3 Conclusions

The study identified nine indicators for the project harmony potential namely; Time, Cost, Quality, Stakeholder involvement, Project environmental Impact, Operational Health and Safety, Mutual trust, and User Satisfaction. These indicators were considered to be a result of effective conflict management in a project. Their subsequent levels were measured, then combined to give a composite measure of the project harmony potential. Research findings concluded that the project harmony potential was average. This indicates the dire need for identification and management of conflicts in construction projects if a harmonious project is to be attained, which translates to the project success. The second objective of this study sought to understand the practise of Conflict management in construction projects in Kenya. The study supported the findings by Morris et al. (1998) that the responsibility to review and understand the dynamics of conflict and manage it rests on the project manager. Therefore, the need to lay a focus on the technical experience of the Construction Project Manager considering three key technical areas; academic qualifications, training, and experience in conflict management, ability to use BIM, and project management tools. The research also established the need for utilizing project participants' experience in conflict management gained from past projects and a clear and elaborate communication plan formulated for observation during the entire process of project implementation. In conclusion, the research indicated the inevitability of dysfunctional conflicts between participants, as the rate was found to be above average. Most of these conflicts were found to be between the design team and contractor, followed by conflicts between developer and contractor, and less frequent between developer and material supplier, and contractor and sub-contractor respectively. Individually, contractors were found to be the highest contributors of conflict, followed by consultants, material and equipment supplier, and clients in a decreasing order.

The most prominent areas of conflict include delays in progress payments by the client, Poor site management and supervision, Difficulties in financing project, Poor qualification of the contractor's technical staff, Ineffective planning and scheduling of project, and Accidents during construction. According to the study findings, the five most severe effects associated with the conflicts in a descending order are: Loss of profitability and perhaps business viability, Delays in project delivery, Increasing project cost, Loss of company and professional reputation, Rework and relocation costs for men, equipment and materials, and Abandonment of projects leading to loss of valuable time and money.

However, the level of project harmony in construction projects can be improved if the strategies and practice for conflict management is improved. The study established a regression model for evaluating harmony potential using predictor variables identified in the literature review. Six of the predictor variables, namely; Delay management, Project team partnering orientation, direct provisions of conflict management in the Project Handbook, Promptness of Monitoring and Evaluation, CPM Technical experience and Clear Communication plan had explanatory power in predicting the project harmony potential. These factors were found to explain 69.1% of the project harmony potential, and therefore, the model was suitable for predicting project harmony potential for construction projects in Kenya. However, project suitability by environment, expertise of the CPM on psychology and criminology, and personality management were found not to significantly affect the project harmony potential.

5.4 Recommendations

The study revealed that there was a positive and statistically significant linear relationship between the project harmony potential and each of these factors; delay management, promptness of Monitoring and Evaluation work, direct provisions for conflict management in the Project Handbook, CPM technical experience, clear communication plan, project team partnering orientation, and project suitability by environment.

The research further established that the six predictor variables; Delay management, Project team partnering orientation, direct provisions of conflict management in the Project Handbook, Promptness of Monitoring and Evaluation, CPM Technical experience and Clear Communication plan had an explanatory power in predicting the project harmony potential in construction projects in Kenya. The research therefore recommends the following;

1. To achieve a high project harmony potential level for construction projects in Kenya, greater focus should be on Monitoring, control, and Evaluation, diagnosing the state and nature of any arising conflict to prepare an intervention plan and recommend the best solution as provided in PMBOK 5th edition.
2. As technical incompetency was considered a major challenge in conflict formulation and therefore conflict management, the right stakeholders have to be selected for the project, the main focus being academic qualifications, training, and experience in conflict management, ability to use BIM, and project management tools.
3. Enough room should be created for the inflow of experiences gained from past projects, by the various stakeholders, towards a project at hand.
4. A comprehensive diagnosis should involve an assessment of the amount of personal and substantive conflict at the interpersonal, intragroup, and intergroup levels and their sources, and an analysis of relations among them. The results should enable the project managers to identify the problems of conflict, if any, and draw the best type of intervention necessary for managing the conflicts.
5. Support from the top management in managing conflicts. Change of organizational routine or behaviour was ranked as one of the strategies to attaining a greater project harmony potential through conflict management. French and Bell (1999) in Mutungi (2018) suggest that transformational leadership in an organizational culture requires a lot of support from the top management.

5.4 Areas for Further Research

1. The developed model in this research incorporated a segment of the factors believed to affect the potential of project harmony based on the literature reviewed. These factors have been found to account for 69.1% of the project's harmony potential. A further study should therefore be undertaken to define and include the other factors that account for the remaining 30.9% of the project harmony potential.
2. The study defined project harmony to allude to the inverse of a project brimming with conflicts. It would be important to investigate the actual relationship between harmony potential and project performance level.
3. The study made an assumption that the indicator variables used had equal weighting in defining the project harmony potential. Further study should be conducted to determine the actual weighting for each of these indicator variables of harmony potential.
4. In this study, the constant in the regression model was found to be statistically significant which somewhat weakens the model. Further study should be done to lower the statistical significance of the constant, for example by refining the operational definition of the explanatory variables and exploring non-linear regression options.

5.5 Summary

This chapter has presented the summary of findings, conclusions, recommendations based on the analysed data, and areas for further research. The information that follows includes the references and appendices relevant to this study.

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APPENDICES

Appendix I: Questionnaire Cover Letter



**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND
TECHNOLOGY
SCHOOL OF ARCHITECTURE AND BUILDING SCIENCES (SABS)**

SAMUEL KIILU MBATHA,
P.O BOX 62000-00200,
NAIROBI, 0711 351 816
Samkiilu@gmail.com

Name of the responded (optional):

Dear Sir/Madam,

RE: REQUEST TO PARTICIPATE IN A RESEARCH PROJECT

I kindly request you to participate in my research project entitled: Investigating the practice of conflict management in construction projects in Kenya.

I am undertaking this study as partial fulfillment of the requirement for a Master's degree in construction project management at the School of Architecture and Building Sciences (SABS) in Jomo Kenyatta University of Agriculture and Technology (JKUAT). I therefore request you to kindly fill in the attached questionnaire. The purpose of this questionnaire is purely academic and the information gathered through it will be kept confidential.

I will appreciate your assistance in my educational endeavors, which you will achieve by completing the questionnaire as honestly and promptly as practicable.

Thanking you in advance.

Yours Faithfully,

SAMUEL KIILU MBATHA,
Department of Construction Management,
SABS, JKUAT, KENYA

Appendix II: Questionnaire

SECTION A: DEMOGRAPHIC DATA

Please provide the following information about yourself and the firm. Kindly put a tick (✓) in the box next to the selected response. *An appendix has been provided at the end of the document defining all the technical terminologies.*

Kindly tick your role in this firm/project?

- | | |
|---|---|
| <input type="checkbox"/> Construction Project Manager | <input type="checkbox"/> Construction Manager |
| <input type="checkbox"/> Architect | <input type="checkbox"/> Quantity surveyor |
| <input type="checkbox"/> Civil & Structural Engineer | <input type="checkbox"/> Site agent |
| <input type="checkbox"/> Others (state please) | |

1) How long have you been in practice in the construction industry, either in execution, consultancy, or procurement

- | | |
|--|--|
| <input type="checkbox"/> Less than 5 years | <input type="checkbox"/> 10-15 years |
| <input type="checkbox"/> 5-10 years | <input type="checkbox"/> Over 15 years |

2) Kindly indicate the highest level of education you have worked in the construction industry

- | | |
|---|--|
| <input type="checkbox"/> Trade test | <input type="checkbox"/> Higher National diploma |
| <input type="checkbox"/> Certificate | <input type="checkbox"/> Bachelor's degree |
| <input type="checkbox"/> National Diploma | <input type="checkbox"/> Masters |
| <input type="checkbox"/> Doctoral | |

3) Kindly indicate your area(s) of technical training and/ or practice.

- | | |
|---|--|
| <input type="checkbox"/> Project Management | <input type="checkbox"/> Quantity surveying |
| <input type="checkbox"/> Architecture | <input type="checkbox"/> Building Technology |
| <input type="checkbox"/> Civil & Structural Engineering | <input type="checkbox"/> Electrical/ service engineering |
| <input type="checkbox"/> Construction Management | <input type="checkbox"/> Accounting |
| <input type="checkbox"/> Others (state please)..... | |

4) In which category does your firm belong?

National (Local) African International (Foreign) N/A

5) Kindly indicate the management level of your status in the firm

Top level management Middle-level management
 Lower level management

SECTION B: PROJECT HARMONY POTENTIAL

1) Please indicate the type of project

Residential Industrial Mixed use
Development
 Multi residential Civil
 Institutional
 Others (Specify)

2) Kindly provide the following project data:

a) Contract Sum in Kshs. _____
b) Final Account amount in Kshs. _____
c) Planned Contract period in days _____
d) Actual contract period in days _____

3) On a scale of 1 to 5 please indicate your level of satisfaction with quality of the project

1 Very dissatisfied 2 Dissatisfied 3 Fairly satisfied
4 Highly satisfied 5 Very satisfied

4) On a scale of 1 to 5 kindly rate the level of consultation among the stakeholders during project implementation.

1 Poor 2 Fair 3 Good
4 Very good 5 Excellent

5) How many other projects of a similar nature have you been actively involved in the last 5 years?

1 None 2 1- 5 projects 3 6-10 projects

4 [] 11-15 projects 5 [] Over 15 projects

6) If your answer to question 5 above is more than one project, how often did you get a chance to share your past experience on conflict management during the implementation of this project?

1 [] Never 2 [] Rarely 3 [] Many times
4 [] Most of the time 5 [] Always

7) Was the project approved by NEMA before the commencement of construction work?

[] No [] Yes

8) Was there any complaint(s) received from the public regarding the negative environmental impacts of the project during the construction stage?

[] Yes [] No

9) During construction was the construction site closed for operation at any one time by NEMA officials due to non-compliance with environmental requirements?

[] Yes [] No

10) During construction was the construction site closed for operation at any one time by any of the following factors of the project environment? (Tick Yes or No)

S/N	Factor of project environment	Yes	No
1.	Construction regulatory bodies		
2.	Local community		
3.	Political forces		
4	Weather factors		

11) During the project implementation were there (Tick Yes or No)

S/N		No	Yes
1.	Planned regular site meetings		
2.	Regular update of work program		
3.	Revisions to drawings and specifications when necessary		

12) On a scale of 1 to 5 kindly indicate under each category the number of accident cases that were reported during the construction of the project.

Rank scale: 1 = more than 30 cases, 2 = 21-30 cases, 3 = 11-20 cases, 4 = 1-10 cases, and 5 = 0 cases

S/N	Accident category	1	2	3	4	5
1.	Injuries led to death					
2.	The injuries led to immediate admission to hospital and/or absenteeism from duty					
3.	The injuries were treated by First Aid on site and did not lead to absenteeism from duty					

13) Kindly rate your level of certainty of the project stakeholders' ability to perform productively during the project execution

1 [] Very low 2 [] Low 3 [] Moderate
 4 [] High 5 [] Very high

14) Select one statement below that correctly explains the utilization of the facility for its intended purpose

- 1 [] Completely unutilized
- 2 [] Utilized for the unintended purpose
- 3 [] Not sure of the facility use
- 4 [] Utilized for the intended purpose
- 5 [] Completely utilized for intended purpose

SECTION C: CONFLICT AND CONFLICT MANAGEMENT

1) How often is the progress in your projects affected by conflicts between project participants?

Very High (VH); High (H); Moderate (M); Low (L); None (N)

2) Who carries out conflict management in your firm?

Project Manager Construction manager
 Architect Quantity surveyor
 Project engineer Others (state please).....

3) How would you rate the frequency of conflict resolution amongst the following groups of participants in your firm for different projects?

Rank Scale: 1 = Very High, 2 = High, 3 =Moderate, 4= Low 5= Not applicable

SN	Project Variables	1	2	3	4	5
1	Design team and contractor					
2	Design team and Developer					
3	Developer and contractor					
4	Developer and material supplier					
5	Contractor and sub-contractor					

4) In your view and by drawing on your experience. Kindly rate the following as areas of conflict in construction projects.

Rank Scale: 1 = Very High, 2 = High, 3 =Moderate, 4= Low 5= Not applicable

SN	Project Variables	1	2	3	4	5
1	Project documents errors					
2	Multiple meanings of specifications					
3	Poor or inadequate communications					
4	Project cultural, socio-economic situation					
5	Extensive contract variations					
6	Differences in evaluation					
7	Delays in payments					
8	Contractual claims (on extension of time and financial claims)					
9	Project implementation environment					
10	Others (Specify)					

5) In your view and by drawing on your experience. Kindly rate the following resultant impacts of conflicts on the project performance.

Rank Scale: 1 = Very High, 2 = High, 3 =Low, 4= Very Low 5= No Impact

SN	Resultant impacts of conflicts	1	2	3	4	5
1	Abandonment of projects leading to loss of valuable time and money					
2	Increasing project cost					
3	Delays in project delivery					
4	Possibility of litigation					
5	Feel of frustration that manifests as aggressive behaviour					
6	Loss of profitability and perhaps business viability					
7	Loss of company and professional reputation					
8	Diminution of respect between parties deterioration of relationship and breakdown in cooperation					
9	Rework and relocation costs for men, equipment and materials					

6) To what extent do you think proper conflict management contributes to the reduced cost of a project?

1 [] Very low 2 [] Low 3 [] Moderate
4 [] High 5 [] Very high

7) To what extent do you think proper conflict management contributes to the reduced completion time of a project?

1 [] Very low 2 [] Low 3 [] Moderate
4 [] High 5 [] Very high

8) To what extent do you think proper conflict management contributes to improved quality of a project?

1 [] Very low 2 [] Low 3 [] Moderate

4 [] High

5 [] Very high

9) In general, how would you rate the frequency of use and the level of effectiveness of these practises when used in solving conflicts?

1 = Very frequent/ Very effective, 2= Frequent/ Effective, 3= Fairly Frequent/ Fairly effective, 4= Not frequent/ Not effective

SN	Current practises of addressing or resolving conflicts	Frequency				Level of effectiveness			
		4	3	2	1	4	3	2	1
1	Avoiding								
2	Smoothing								
3	Compromising								
4	Forcing								
5	Collaboration								
6	Others (Please specify)								
								

10) In general, how do you rate the influence of the following factors in effective conflict management in construction projects?

Ranking scale: 1= Ineffective, 2= Fairly effective, 3= Effective, 4= Very effective, 5= Extremely effective

S/N	Factors of conflict management	1	2	3	4	5
1	Delay management					
2	Project suitability by environment					
3	Project team partnering orientation					
4	Direct provisions for conflict management in the Project Handbook					
5	Promptness of Monitoring and Evaluation work					
6	Technical Opinions/Approaches					
7	CPM technical experience					

8	Expertise of the CPM on psychology and criminology	
9	Clear communication plan in the project	
10	Personality Management	

11) What other best practices and strategies would you recommend to avoid /manage conflicts in construction projects?

.....

.....

.....

Thank you for your time!

Appendix III: Glossary

- a) **Conflict:** A state of disagreement, dissonance, resistance, dissonance, or incompatibility between and among persons (Ejohwomu et al., 2016).
- b) **Dispute:** A conflict of which all the affected parties or individuals are conscious of (Mitkus & Mitkus, 2014).
- c) **Harmony:** The practice of identity in order between parts, subsystems, and the environment in each step of project execution, with key considerations on quality, time, cost, and risk. A state in which team members are tranquil and agree with one another, or where things appear to be right or fitting together. (Wang et al., 2020).
- d) **Lower-Level Management:** Consists of supervisors, team leaders, and department heads who are directly responsible for overseeing the day-to-day operations of a specific department or team within the organization. Also known as first-line or frontline management, they supervise the work of non-managerial employees, ensuring that tasks are completed efficiently and according to established procedures (Robbins et al., 2017).
- e) **Middle Level Management:** Comprises managers who are responsible for implementing the policies and strategies set by top management. They oversee the work of lower-level managers and ensure that organizational goals are met efficiently, ensuring that strategic plans are effectively executed and operational goals are achieved (Robbins et al., 2017).
- f) **Project participants** -The individuals or groups who are involved actively in the project in which their preferences are affected both positively and negatively and result to project completion success (Project Management Institute, 1996).
- g) **Project performance:** The extent to which the project achieves the set targets including budget, safety, time, quality as well as overall satisfaction of the clients (Lisa et al., 2023).
- h) **Top level Management:** The highest level of executives in an organization who are responsible for making strategic decisions and setting the overall direction of the company. According to an article published by Forbes (2022), this consists of

executives such as CEOs, presidents, and board members who are responsible for setting the company's overall direction and making key strategic decisions.

Appendix IV: Findings from Literature Review and Knowledge gap

Authors	Study Title	Methodology	Findings	Knowledge gap	Focus of current Study
Acharya et al. (2006)	Conflicting factors in construction projects: Korean perspective	Survey research design	Critical construction conflicting factors pertinent in Korean context: differing site condition, public interruption, differences in change order evaluation, design errors, excessive contract quantities variation, double meaning of specifications. Owner and consultant are mostly responsible parties for conflicts in construction projects.	The study focuses on conflicting factors in construction projects from a Korean perspective, but it lacks a comparative analysis with conflict management practices in other regions.	Current study focuses on conflict management strategies in the context of Kenyan Construction industry
Adebayo et al. (2021)	Exploring the significant factors that influence delays in construction in Hargesia	Descriptive research design	Delay in honoring payment Progressively, underestimation or overestimation of the project cost, and delay in the approval of major changes in the work scope	While the study explores factors influencing delays in construction, it does not specifically delve into how conflicts contribute to project delays.	Current study investigates the direct impact of delays on construction conflicts and how to mitigate conflicts caused by delays
Agwu (2013)	Conflict management and employees performance in Julius Berger Nigeria Plc, Bonny Island	Descriptive research design	Promotion of industrial democracy, regular management/employees meetings, and strict implementation of collective agreements and regular review of personnel policies necessary	The study examines conflict management and its impact on employee performance but does not address the broader implications of conflicts on project outcomes.	Current Study explores the relationship between conflict and project success in construction projects, providing insights into the overall project performance.
Alaloul et al. (2019)	A comprehensive review of disputes prevention and resolution in construction projects	Comparative research design	Unsuccessful communication between the client and the contractor as a result of unfair behavior of the parties to a construction contract agreement and psychological defense mechanisms	While the review covers disputes prevention and resolution, it lacks a specific focus on the role of communication strategies in effective conflict management.	Current study investigates the effectiveness of communication plan in preventing and resolving conflicts in construction projects.
Anwar et al. (2012)	Managing conflicts through personality management	Survey research design		The study explores conflict management through personality management but may overlook the	Current study examines the interplay between personality management and organizational structures in

Authors	Study Title	Methodology	Findings	Knowledge gap	Focus of current Study
Aula & Siira (2010)	Organizational communication and conflict management systems: A social complexity approach			organizational and systemic factors contributing to conflicts. Study focus on organizational communication and conflict management systems from a social complexity approach. Leaves a gap in the impact of cultural diversity within organizations on conflict management systems.	conflict resolution within construction projects. Current study investigate the contribution of cultural differences in the effectiveness of conflict resolution strategies in diverse project environments.
Celik (2013)	The Effect of Role Ambiguity and Role Conflict on Performance of Vice Principals: The Mediating Role of Burnout	Survey research design	The direct and indirect effects of role conflicts on job performance were significant. The direct and indirect effects of role ambiguity on job performance were significant.	Study delves into the effects of role ambiguity and role conflict on performance, mediated by burnout. A gap lies in exploring the role of emotional intelligence in mitigating the negative effects of role ambiguity and conflict on individuals' performance.	Current study examines how emotional intelligence can act as a buffer in stressful situations.
Digvijaysinh (2013)	Conflict and Conflict Management	Survey research design		Study leaves a gap in the exploration into the role of partnering orientation in conflict resolution.	Current study investigating how partnering orientation impact conflict management strategies to offer valuable insights into fostering a more harmonious work environment.
Ejohwomu et al. (2016)	Causes of Conflicts in Construction Projects in Nigeria: Consultant's and Contractor's Perspective	Survey research design	Poor financial projections on the client's side was identified as the most significant cause of conflicts. Furthermore, it was found that there are no difference in the perception of both groups of respondents.	Only deals with conflicts between consultants and contractors and leaves the other key participants in a construction project	Current study focuses conflicts from key participants in construction projects (Clients, contractors, consultants and material and equipment suppliers) to provide insights into developing culturally sensitive conflict resolution

Authors	Study Title	Methodology	Findings	Knowledge gap	Focus of current Study
Femi (2014)	Causes And Effects of Conflict in The Nigerian Construction Industry	Survey research design	<p>Causes of conflicts: win-lose scenario, failing to share credit, questioning others motives, disgruntled client, diverse perspectives, Arrogance, assumption, competitive personality and feeling judged.</p> <p>Most severe effects of conflict: Damaged and psychological wellbeing, complaint and blaming, dissatisfactions and stress, insubordination, withdrawal and miscommunication</p>	Only deals with conflicts between Project Managers and contractors and leaves the other key participants in a construction project. could benefit from further investigation into the role of communication breakdowns in conflict escalation.	<p>strategies to enhance project outcomes.</p> <p>Current study focus on how ineffective communication channels and misunderstandings contribute to conflicts in construction projects, and propose communication improvement strategies to prevent and resolve conflicts more effectively.</p>
Jaffar et al. (2011)	Procedia Engineering Factors of Conflict in Construction Industry: A Literature Review	Survey research design	<p>Factors of conflict due to behavioral factors: reluctant to check for constructability, clarity and completeness and poor communication among project team.</p> <p>Factors of conflict due to contractual problems: late giving of possession, delay interim payment from client and unclear of contractual terms.</p> <p>Factors of conflict due to technical problems: contractor fails to proceed in a competent manner and late instructions from architect or Engineer.</p>	Study has limited focus on the impact of cultural differences on conflicts.	Current study explores how cultural diversity among project stakeholders influences conflict dynamics and develop culturally sensitive conflict management strategies.

Authors	Study Title	Methodology	Findings	Knowledge gap	Focus of current Study
Kingsley (2015)	Managing conflicts in construction of public projects in Ghana	Case study research design	<p>Inadequate communication and contradicting instructions are the leading causes of conflict.</p> <p>The effects of conflict on project success include project delays, stays and ineffective construction and reduced productivity at site.</p> <p>Participants in the study prefer the use of collaborating and compromising styles in solving conflict on sites.</p>	Does cover the role of stakeholder engagement in conflict management within public construction projects.	Current study focus on the role of stakeholder involvement to the overall project harmony potential level.
Soni et al. (2017)	Conflicts and Disputes in Construction Projects: An Overview	Survey research design		Impact of cultural differences on conflict management within construction projects.	Understanding how cultural diversity influences conflict resolution strategies provides valuable insights for improving conflict management practices in multicultural project environments.
Ullah (2023)	Sources of Conflicts between Key Stakeholders in a Public Construction Project: A Case Study of Construction of Research & Academic Facilities (CRAF) Project	Case study research design	The task-focused issues such as defective design, excessive quantity variations, and excessive change orders, etc. are causing conflicts between the key stakeholders of the project	Ullah focused on conflicts between key stakeholders in public construction projects. Study lacks attention to the role of cultural diversity in stakeholder conflicts.	Current research focus on cultural differences impact stakeholder interactions, leading to the development of culturally sensitive conflict management approaches in construction projects.
Zitulele (2021)	Modelling conflict resolution styles ideal for risk control in Construction project execution in the Cape metropolis	Descriptive research design	Adherence to basic or traditional conflict management styles, but with pronounced diversion evidently emanating from cultural diversities	A knowledge gap lies in examining the influence of project complexity on the effectiveness of different conflict resolution models.	Current study focus on how project complexity factors into the selection and success of conflict resolution strategies.
Kituku (2015)	Influence of Conflict Resolution Strategies on	Survey research design	conflict resolution strategies adopted influence the implementation of a project	Study leaves a gap in the examination of the influence of	Current study looks on how organizational culture shapes

Authors	Study Title	Methodology	Findings	Knowledge gap	Focus of current Study
	Project Implementation: A Case of Titanium Base Limited Kwale			organizational culture on the effectiveness of conflict resolution strategies.	the adoption and success of conflict resolution approaches.
Hilda (2014)	Effects of Conflicts on Project Team Productivity: a Case of Jaza Jaza Project At Mastermind Tobacco Kenya Limited	Case study research design	Company faces conflicts related to project leadership, organizational structure and stakeholder involvement but to varying extents.	A potential knowledge gap is the exploration of the role of stakeholder engagement in mediating conflicts and enhancing team productivity.	Current research investigates how stakeholder involvement influence conflict resolution within project teams and subsequently impact productivity levels.

Source: (Author, 2020)

Appendix V: Sample Size Determination

Four options were considered in the sample size calculations

Option 1

A suitable sample size was determined using the following formula extracted from (Mugenda & Mugenda, 2008). The formula can be used to determine the sample size where the population is greater than 10,000.

Equation 3.1: Sample size for infinite population

$$n = \frac{Z^2 pq}{d^2}$$

Where; **n**= the desired sample size (if the target population is greater than 10,000).

Z= the standard normal deviate at the required confidence level.

p= the proportion in the target population estimated to have characteristics being measured;

q= 1-p.

d= the level of statistical significance set.

The value for **Z** is found in statistical tables which contain the area under the normal curve.

Where there is no estimate available of the proportion in the target population assumed to have the characteristics of interest, 50% (maximum variability) and $\pm 5\%$ precision (Mugenda & Mugenda, 2008). For confidence level of 95%, **Z**= 1.96.

Therefore,

$$n = \frac{(1.96)^2 (0.50)(0.50)}{(0.05)^2}$$

n=385 respondents

Option 2

The above sample, however, is for an infinite population. It is therefore necessary to correct the statistics based on the actual population size. A formula cited in Kass (2012) shows that a sample can be calculated using the following equation for 95% confidence level.

Equation 3.2: Sample size formula

$$n = \frac{n'}{1 + \left(\frac{n'}{N}\right)}$$

Where; **n**= sample size from finite population

n'= sample size from infinite population = S^2/V^2 ; where S^2 is the variance of the population elements and V is a standard error of sampling population. (Usually $S=0.5$ and $V= 0.06$)

N=total number of the population

Therefore;

$$n = \frac{n'}{1 + \left(\frac{n'}{N}\right)}$$

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

$$n' = \frac{0.5^2}{0.06^2}$$

$$n' = 69.44$$

$$n = \frac{69.44}{1 + \left(\frac{69.44}{260}\right)}$$

$n=55$ respondents

Option 3

Adopting the formula proposed by Ayoub and McCeun (2000) and cited in Mutungi (2018) correction for finite population is provided by the following equation:

Equation 3.3: Sample size formula for finite population

$$n = \frac{N}{1 + \frac{N-1}{Pop}}$$

Where; n = New sample size

N = Sample size = 385

Pop = population size= 260 actors (NCA1- NCA5 contractors and consultancy firms based within Nairobi)

Therefore;

$$New\ n = \frac{385}{1 + \frac{385-1}{260}}$$

New $n= 155$ respondents

Option 4

Yamane (1967) cited in Mutungi (2018) provides a simplified formula which can be used in calculating the sample size.

Equation 3.4: Sample size calculation formula

$$n = \frac{N}{1 + N(e)^2}$$

Where; **n**= Sample size

N= population size and

e=the level of precision (confidence level, usually set at 0.05)

Therefore;

$$n = \frac{260}{1 + 260(0.05)^2}$$

n= 158 respondents

Having compared the three sample sizes provided by the three different formulae, a sample size of 158 respondents was arrived at. This is because two of the formulae produced sample sizes with a difference of three units only (155 and 158). The sample size provided by the formula cited in Kass (2012) was significantly different from the rest and was also considered to be too low to be a representative of the entire population.

Appendix VI: Summary of Key Findings and Recommendations

No	Key findings	Recommendations
1.	Promptness of Monitoring and Evaluation work is positively related to project harmony potential	<p>Project Managers need to put greater focus on Monitoring and Evaluation, diagnosing the state and nature of any arising conflict to prepare an intervention plan and recommend the best solution as provided in PMBOK 5th edition.</p> <p>Project Managers and top level management need to employ strategic management and operating styles including; Strategic planning of resources; scoping with a value perspective; application of compromise; endorsing project and program management processes.</p>
2.	Direct provisions for conflict management in the Project Handbook is positively related to project harmony potential	<p>Project Manager should have a conflict management plan developed at the initiation stage of the project, with strategies of mitigating conflicts.</p> <p>Project manager can refer to Project Management Body of Knowledge (PMBOK) Edition 6 (Chapter 9: Resource Management Section 9.5.2) for strategies and techniques that can be used to address conflict management.</p> <p>Project Manager need to employ a more collaborative effort with all participants in the organization.</p>
3.	CPM technical experience is positively related to project harmony potential	<p>Clients and developers need to lay a focus on the technical experience of the Construction Project Manager considering key technical areas; academic qualifications, training, and experience in conflict management, skills in developing strategies, ability to use BIM, and project management tools.</p> <p>Construction Project Managers and top level management in organizations need to create enough room for the objective inflow of experiences gained from past projects, by the various stakeholders, towards a project at hand.</p> <p>Construction Project Managers to focus on learning and continuous improvement especially on areas of quality (both of products and processes) and safety</p>
4.	Clear communication plan is positively related to project harmony potential	<p>Contractors and Project Managers should establish a clear and elaborate communication plan for observation during the entire process of project implementation through allocation of responsibilities to individuals, teams, and departments.</p> <p>As an intermediary between client and contractor, consultants should promote efficient communication and coordination among project stakeholders.</p>

No	Key findings	Recommendations
5.	Project team partnering orientation is positively related to project harmony potential	Proper collaboration between the designers and implementers; integration of all levels of project participants in conflict management
		Project manager to integrate teambuilding techniques.
		Project manager to eliminate learning curves where long-term relationships occur.
6.	Delay management is positively related to project harmony potential	Contractors, through risk assessors and project managers need to carry out a comprehensive diagnosis involving an assessment of the amount of personal and substantive conflict at the interpersonal, intragroup, and intergroup levels and their sources, and an analysis of relations among them, to identify the problems of conflict, if any, and draw the best type of intervention necessary for managing the conflicts in a timely manner.
		Project Managers and developers need to practice value based procurement by appraising service providers and new building products and technology for timely returns.
		Value engineering through early involvement of contractors to maximize constructability.
		Different consultants should immediately remedy any flaws and errors in the project documents and contracts to avoid delays in the progress of activities
7.	Project suitability by environment is positively related to project harmony potential	The consultants should conduct adequate site investigations during the feasibility study and conceptual design phases to prevent suspending work during the building phase to address design issues.
		Developers and contractors should advocate for change of organizational routine or behaviour to a culture that motivates all members of the organization.
		Top level management should lay strategies that support management conflicts of conflicts within teams and departments in the organization.
8.	Synthesized framework	The synthesized model developed is to be tested in conflict management for building projects. It is anticipated that the model framework will enhance harmony potential level for construction projects in Kenya.

Appendix VII: Questionnaire; Framework Validation

SECTION A: SECTION A: ROLE OF THE RESPONDENT

1) Kindly indicate your role?

Contractor Consultant

SECTION B: FRAMEWORK ACCEPTANCE LEVEL

2) How would you rate the proposed (appended) framework based on the following validation questions?

Fair	—————→				Excellent
1	2	3	4	5	

S/N	Validation Questions	1	2	3	4	5
1.	How useful would you rate the overall framework for stakeholder management in construction?					
2.	How effectively can the framework facilitate the overall success of construction projects?					
3.	How would you rate the applicability of the framework in construction projects?					
4.	How would you rate the logical structure of the framework?					
5.	To assess the extent to which the framework is able to enable continuity of stakeholder management process in construction projects.					
6.	How effectively does the framework focus on stakeholder management issues relevant to construction projects?					
7.	How would you rate the comprehensiveness of the framework?					

SECTION C: SUGGESTIONS FOR IMPROVEMENT

3) Kindly suggest ways in which the proposed framework may be improved.

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Thank you for your time!