

**EVALUATION OF CONFLICT MANAGEMENT
STRATEGIES IN THE DELIVERY OF ROAD PROJECTS IN
IMO STATE**

BY

**IGBOKWE GUY NNAMDI (B. TECH, PMT, FUTO)
REG NO: 20074594958**

**A THESIS SUBMITTED TO THE POST GRADUATE
SCHOOL FEDERAL UNIVERSITY OF TECHNOLOGY,
OWERRI**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE AWARD OF MASTER OF SCIENCE (M.SC) DEGREE IN
PROJECT MANAGEMENT TECHNOLOGY**

APRIL, 2013

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CERTIFICATION

We hereby certify that this thesis titled Evaluation of Conflict management strategies in the delivery of road project in imo state is the work of Igbokwe Guy N. with registration No. 20074594958 in the Department of Project Management Technology (PMT), Federal University Technology.

Engr. (Dr) E.C. Ubani
(Supervisor)

Date

Engr. Prof. F.P.O. Ukwuoma
(HOD PMT).

Date

Prof. S.M. Nzotta
Dean, SMAT

Date

Engr. Prof. K.B. Oyoh
Dean, Postgraduate School
FUT, Owerri.

Date

External Examiner

Date

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DEDICATION

This work is first dedicated to the **ALMIGHTY GOD**, who made it possible for me to overcome all the hurdles of this postgraduate programme.

It is also dedicated to my parents Mr. Igbokwe Clifford O. and Mrs. Igbokwe Christiana A. through whom I first came to understand the usefulness of knowledge I thank God for Mr. Igbokwe Clifford (Aka sir Cliff) as he was profoundly called. Though he is gone but his timeless words and teaching remain invaluable to us, his children and relevant even to the present generation . You are a legend.

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ABSTRACT

This study aims to evaluate the influence of conflict management strategies in the delivery of road projects in Imo State with particular reference to three selected road project in Imo State. The research designs adopted for this study are ex-post facto and survey which was conducted using a well structured questionnaire to obtain information. The sampling designs adopted are simple random sampling for questionnaire distribution and judgemental sampling for the selection of three roads and three construction companies. Multiple regression analysis and descriptive statistics were used for data analysis. The results showed that conflict management strategies was relatively effective and best suited in conflict organizations. Sources of conflict are identified to be in the management of road project, Alternative dispute resolution and conflict resolution models are significantly effective in the management of road project. The study concludes that the independent variables are significantly related to one another and have significant effect in dependent variable. It recommends that conflict should not be allowed to escalate before appropriate measures are taken to resolve it.

KEYWORDS: conflict management strategies, delivery, road project, Imo State.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND STUDY/OVERVIEW OF STUDY

Conflict theory emerged as an alternative to structural functionalism and to provide answers to questions which structural functionalism failed to provide. The theory of structural functionalism according to Talcott Parsons (1975) views society as a system which means that society is made up of a set of inter-connected parts which together form a whole. According to Ekpenyong (2003), the basic assumptions of the conflict theory are as follows: -

- (i) Every society is at every point subject to processes of change and that social change is everywhere.
- (ii) Every society is at every point subject to dissensions and conflict. Therefore, social conflict is ubiquitous.
- (iii) Every element in a social system renders a contribution to its disintegration and change.
- (iv) Every society is based on the coercion of some of its members by others.

The conflict theory was propounded by the German Philosopher-sociologist Karl Marx and that is the reason why

this theory is often times referred to as the Marxist theory. This theory states that, conflict is endemic in the society as a result of the unequal distribution of wealth, power and prestige in the society. Groups struggle with one another to increase their share of the resources and in the process of doing that, there is always a clash of interest between the owners of the means of production (the bourgeoisie) and the labourers (the proletariats). The clash of interest leads to conflict in the society.

Karl Marx and Friedrich Engels in their communist Manifesto of 1848, observed that society is composed of social groups divided into social classes which are always engaged in a conflict over who controls the wealth of the land. The ruling class of a society owes its position to its ownership and control of the means of production. The ruling class of the society or the bourgeoisie dominates other social groups in society by using the institutions of society to perpetuate their positions in the society. Marxism is of the view that, at the dawn of human history, when man lived in a state of primitive communism, the forces of production were communally owned because, each member of society produced both for himself and for society as a

whole. There was no conflict of interest between individuals and groups. With the emergence of private property and private ownership of the forces of production, a lot of contradictions in human society was created. A minority was able to control, command and enjoy the fruits of the labour of the majority through its ownership of the forces of production. Since one group gains at the expense of the other, there is always a conflict of interest between the minority who own the forces of production (the bourgeoisie) and the majority who perform productive labour (the proletariat).

According to Ritzer (1996), the conflict theory represents largely a series of contentions that often contradict the views of the functionalist about social reality. He follows modern conflict theorists like Dahrendorf in juxtaposing the tenets of the functionalist and the conflict theorists. Whereas the functionalist view society as static or in a state of equilibrium, the conflict theorists regard society at every point, as being affected by the process of change. Furthermore, whereas functionalists emphasize the orderliness of society by contrast, conflict theorists direct

attention to the existence of dissent and conflict at every point in the social system. Again where, functionalists explain social order in terms of value consensus and common morality, the conflict theorists perceive any order that exist as resulting from coercion of some members by those at the top. The conflict theorist also stress the role of power in bringing about order in society.

Conflict in the management of road project are inevitable. The potential for conflict in information systems development projects is usually high because it involves individuals from different backgrounds and orientations working together to complete a complex task. *The cause of conflict in team projects can be related to differences in values, attitude, needs, expectations, perceptions, resources and personalities.* Proper skills in dealing with conflict can assist project managers and other organization members to handle and effectively resolve conflicts which can lead to a more productive organization as a whole.

Conflict is a clash of interest, values, actions, views or directions of that clash. Conflict is initiated ones there is variance in interest occurs. Generally, there are diverse

interests and contrary views behind a conflict, which are revealed when people look at a problem from the viewpoint alone. *Conflict* is an outcome of organizational intricacies, interactions and disagreements. It can be settled by identifying and neutralizing the etiological factors. Once conflict is concluded, it can provoke a positive change in the organization.

When we recognize the potential for conflict, we implicitly indicate that there is already a conflict of direction, even though it may not have yet manifested itself as a clash. Confliction is the process of setting up, promoting, encouraging or designing conflict. It is a willful process and refers to the real effort put into generating and instituting conflict. Deconfliction is the annihilation of conflict. It does not refer to negotiation or bargaining or even to resolution of conflict. It is the effort required to eliminate the conflict.

It is not uncommon for the activities of an organization to bring members into competition with each other, which in turn, lead to conflict. Wherever many numbers of people are working together, there is an almost infinite variety of relationship between individuals and groups and anyone of

these relationships is a potential source of conflict. Actions or inactions on the part of management can also lead to misunderstanding. Conflict occurs in both profit and non profit making organization. In Nigeria, conflict has been very rampant, with its consequent adverse effect on project management and services at different level.

One of the reasons for failure of project is due to conflicts that arise either while planning or during project execution. At a glance, projects that do not meet its time, cost and quality are said to be a failed project. Therefore, the issue of conflict and improving job productivity among construction workers is the main theme of this research work, since there has not been a clear answer to total conflict eradication among construction workers. In construction industry, the success of project management depends on all the staff doing good quality job at the right time within reasonable cost. Production techniques in construction industry in Nigeria are capital and labour intensive and because of scarcity, limited supply of machines and high cost of plant and equipment for construction, human labour are over used without the

corresponding pay package. And this has to an extent accounted for low productivity and increased conflict. Certainly, labour is the most active among other factors of production, therefore should be given adequate attention to avoid unnecessary conflict.

1.2 CONCEPTUALIZATION FRAME-WORK

Conflict is regarded as the offspring of disagreement between individuals and between groups. It refers to any situation in which there are incompatible goals, thoughts or emotion within or between individuals or groups. When project team members interact during the course of carrying out their functions, there is always a potential for conflict. Conflicts are therefore inevitable in project organization because the team members usually function by means of adjustments and compromises among competitive elements in their structure and membership. Conflicts should therefore not be deplored. They are inevitable results of progress and change. They should be used constructively. Conflicts can be creative if an integrative approach is used to settle it. This can be achieved by clarifying priorities, policies and roles using agreed procedures to deal with

grievances and disputes. Conflict resolution by sheer exercise of power (win-lose) will only lead to further conflict while resolution by compromise may lead to both parties being dissatisfied (Lose-lose scenario).

In order to fully appreciate how conflicts arise, it is important to understand: wants, needs, goals and interest. Wants are desires for something while needs are necessity for survival. Needs are therefore more universal than wants. Goals on the other hand are ideal set of affairs that we value and work to achieve. Goals are set on basis of our wants and needs. Interests are the potential benefits to be gained by achieving our goals. A healthy relationship exists among project team members when their goals are mutual and compatible with each other. When the goals are opposite, they are in competitive relationship and their interests come under conflict situation. Under this scenario, conflict therefore refers to any situation in which they are incompatible goal, thought or emotions within or between individuals or groups that lead to opposition and disagreements. In other words, conflict occur when individuals or groups have incompatible goals and therefore

make attempts to block each others efforts to attain desired goals. John Dewey once stated that conflict is the gadfly of thought and that it stirs us to observation and memory, instigates inventions and shocks us out of sheeplike passivity. He finally stated that conflict is a sine qua non of reflection and ingenuity.

1.3 STATEMENT OF THE PROBLEM

There is no doubt whatsoever that construction excellence constitutes nation's beauty and to say that the present and future esthetics advancement and beauty in our country, Nigeria, partly depends on quality construction of our roads.

In recent years, a lot of resources, time and quality materials have been lost in either engaging in or resolving one form of misunderstanding or the other in the industrial sector of the Nigeria economy. This ever-increasing incidence of industrial disputes have most often been expressed in strikes and litigation. These problems are: -

1. Conflict among client, contractor, workers & communities.
2. Cost & schedule overrun

3. Strikes
4. Loss of resources, time & quality material
5. Product quality failure
6. Litigation costs
7. Project delay
8. Project abandonment

1.4 OBJECTIVES OF THE STUDY (AIMS AND OBJECTIVE)

The major aim of this study is to identify the sources, effects, & solutions towards achieving managerial excellence in construction industry. The purposes of this study are: -

1. To identify the sources of conflict in the management of road projects.
2. To examine the effectiveness of Alternative Dispute Resolution in conflict.
3. To evaluate the conflict resolution models used in the road sector.
4. To evaluate the incidence of conflict management strategies used in the road construction projects.

1.5 RESEARCH QUESTIONS

1. What are the sources of conflict in the management of road projects?

2. How effective is alternative dispute resolution in conflict?
3. How effective are the conflict resolution models used in the management of road development projects?
4. How successful are conflict management strategies in road projects?

1.6 RESEARCH HYPOTHESIS

HO₁:There are no sources of conflict in the management of road project.

HO₂:Alternative dispute resolution is not an effective remedy for conflict.

HO₃:Conflict resolution models are not effective for the management of road development projects.

HO₄:Conflict management strategies do not significantly determine the successful management of road projects in Imo State.

1.7 SIGNIFICANCE OF THE STUDY

This study was embarked upon with the hope that the results and findings will be added to the existing stock materials by other researchers, thereby expanding the frontiers of knowledge on conflict. Practically, this study will help to educate the public on the impact of conflict on the

management of road projects. It will also help non-Governmental organization (N.G.Os), contractors: State and Federal Government to have insight on how to tackle the problem of conflict in an organization especially construction industry.

Academically, this study will help the students to be aware of the harms of conflict if not properly managed. It will also add to school libraries. Therefore, it is the researcher's belief that the study could be useful to the following people:

1. Government policy makers
2. Captain of an industry and staff
3. Researchers
4. Teachers and students
5. Publishers
6. Corporate organizations

1.8 SCOPE AND LIMITATIONS

Scope of the Study

The scope of this study covers activities of project management, sources, causes and effects of conflict in

project management in Imo State and its resolution.

Therefore, the scope of the study covers: -

1. Project management organization
2. Sources of conflict in construction industry
3. Causes and effects of conflict in construction industry
4. Conflict resolution in an organization
5. Benefits of conflicts in construction industry if properly managed.

Limitation of the Study

This research work would have covered all the construction industries in Nigeria. However, it was limited to only Imo State, this was to enable the researcher concentrate and come out with a quality research work on evaluation of conflict management strategies in the delivery of road projects.

Every research work has its inherent limitations. These limitations are: -

1. Inability of the respondents to give accurate data.
2. Inability of the respondents to return the whole questionnaire given to them.
3. Time was another limitation. The period for the study was so short especially as the study had to be done

coupled with other great academic works in the citadel of higher learning and outside.

4. Finance was also a limitation factor as the research needed to travel severally to various construction companies, libraries for data collections.
5. Finally, there was the problem of getting full materials from internet as most of them were hafly published. All these and others affected the work in one way or the other.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 HISTORICAL BACKGROUND

The exact date of historical background of conflict in project management organization cannot be identify as a result of divergent sources and causes of conflict as associated with human beings. Emphatically, industrial unrest has become a celebrated activity and glaringly enjoyed by mostly employees. Albeit, industrial disharmony is significantly pronounced in recent times, it is as old as industrial creation itself.

Established methods of settling disputes in industries abound but a thorough search through literature portrays that no known literature exists that has critically assessed the settlement of conflicts in construction industry. The reason for this may be attributed to the complexity of the human elements involved and to the wild horizon. Be that as it may, the researcher, therefore reviewed some other literatures related to the one under study, collated,

articulated and correlated them to the circumstances prevalent in construction industry.

2.2 THEORETICAL FOUNDATION

Management objectives in construction industry are to achieve corporate objectives using three core project parameters accordingly cost, time and quality. Higher productivity are achieved when efficient and effective managerial practice are used. On the contrary, if project is not managed well, it leads to high cost, time wastage, poor quality work, Litigation, Arbitration, Alternative Dispute Resolution etc.

Salimbere and Ashley (1986) in expressing the need for uniform & best project management practices, said the most important requirements to deliver a good work are to use a uniform project management method, continuous search for project management best practices and usage, careful analysis of the project manager's managerial expertise and capability.

2.3 RELEVANT MODELS AND THEORIES

The need to mitigate the effects of conflict in a project organization gave rise to a good number of conflict

resolution models. Gini Graham Scott (2008) is championing the development of a model called ERI (Emotions Reason and Intuition) and Jack R. Meredith and Samuel J. Mantel Jr (1995) for Negotiation model.

The ERI model is a conflict resolution approach that attempts to analyze the human resource by looking at their Emotion Reason and Intuition.

Emotions: First, any negative emotion that has led to or is triggered by the conflict situation has to be removed. Whether these feelings of anger, resentment, mistrust or fear are your own feelings or those of other parties, you need to control or channel them so you can work on resolving the problem in a calm and collected way.

You can use a variety of techniques to stop the emotional carnage, whether it involves your CEO or a coworker. If the other person is the one who is emotional, one technique is to listen quietly to let the other person vent, like letting a steam kettle release its steam. You don't have to agree with the other person, just listen calmly and show that you understand what the person is saying. Later,

when he or she calm down, you can deal with the issue in a reasonable way and look for solutions.

Another approach is to initially avoid or delay dealing with the problem and take some time out. This delay can be a chance to gather important information. For example, you might ask your CEO to set up a meeting at another time to discuss the issue, or indicate that you would like some time to get additional information and perhaps even correct the problem with a supplier before you have your discussion.

On the other hand, if you are the one who is angry or about to explode, such as when a supplier has not delivered a critical shipment, has delivered the wrong suppliers or has sent a much higher bill than expected, you need to calm yourself down. One way is to take some time out from the environment and tell the person with whom you are angry with that you couldn't deal with the situation then, but would like to schedule another time to deal with it. Or, you use some self-calming techniques to get your emotions under control. One method is self talk. Self talk is where you mentally tell yourself to clam down, relax, let go of your anger and detach from the situation. Another calming

technique is to think of relaxing and soothing images, such as a favourite lake where you enjoy fishing or you might set up a trigger for yourself, where you associate a certain gesture, like clicking your fingers as your key to calm down. You practice in advance to make the association between the gesture and calming down, so it becomes second nature. Then as you feel your anger rising, you use that gesture to calm yourself.

Reason: The second step in the model is to use reason to better understand the conflict and to know the appropriate strategies to use to resolve the problem. Understanding is critical, because often the apparent reason for a conflict may not be a real one or a conflict may be due to poor communication, a lack of information, wrong assumptions, differing personality styles, or conflicting interests, needs and values.

Through understanding, you can better recognize what the problem is so that you can more effectively work toward resolving it. For example, suppose your initial response to a delayed shipment is to blame the supplier for being irresponsible or incompetent. If you gain more information,

you may find out that the delay is due to an uncontrollable, unpredictable circumstance, such as a terrorist attack in a normally peaceful part of the world or a freak storm during usually mild weather. Instead of feeling the supplier is to be blamed for being irresponsible or you are at fault for not properly managing the shipment, you can apply knowledge and understanding and comfortably shift your focus to determining what to do about the shipment. Once you have removed emotion from the situation and employed reason to gain knowledge, you can then deal with it with your CEO.

The reason phase also involves knowing the different conflict resolution styles and deciding which strategy is most appropriate for each particular situation. It's like having a bag of conflict resolution tricks which you can pull out to use as appropriate. These styles includes: -

- ❖ Confrontation
- ❖ Compromising
- ❖ Smoothing,
- ❖ Forcing and
- ❖ Avoiding

a. Confrontation is described as problem solving, integrating, collaborating or win-win style. It involves the conflicting parties meeting face-to-face and collaborating to reach an agreement that satisfies the concerns of both parties. This style involves open and direct communication which should lead the way to solving the problem. Confronting should be used when: -

- ❖ Both parties need to win
- ❖ You want to decrease cost
- ❖ You want to create a common power base
- ❖ Skills are complementary
- ❖ Time is sufficient
- ❖ Trust is present
- ❖ Learning is the ultimate goal.

b. Compromising is described as a give and take style. Conflicting parties bargain to reach a mutually acceptable solution. Both parties give up something in order to reach a decision and leave with some degree of satisfaction. Compromising should be used when:

- ❖ Both parties need to win
- ❖ You are in a deadlock

- ❖ Time is not sufficient
- ❖ You want to maintain the relationship among the parties involved.
- ❖ You will get nothing if you do not compromise
- ❖ Stakes are moderate.

c. **Smoothing** is referred to as accommodating or obliging style. In this approach, the areas of agreement are emphasized and the areas of disagreement are downplayed. Conflicts are not always resolved in the smoothing mode. A party may sacrifice its own concerns or goals in order to satisfy the concerns or goals of the other party. Smoothing should be used when:

- ❖ Goal to be reached is overarching
- ❖ You want to create obligation for a trade-off at a later time.
- ❖ Stakes are low
- ❖ Liability is limited
- ❖ Any solution is adequate
- ❖ You want to be harmonious and create good will
- ❖ You would lose anyway
- ❖ You want to gain time.

d. Forcing is known as competing, controlling or dominating style. Forcing occurs when one party goes all out to win its position while ignoring the needs and concerns of the other party. As the intensity of a conflict increases, the tendency for a forced conflict is more likely to increase. This results in a win-lose situation where one party wins at the expense of the other party. Forcing should be used when:

- ❖ A "do or die" situation is present
- ❖ Stakes are high
- ❖ Important principles are at stake
- ❖ Relationship among parties is not important
- ❖ A quick decision must be made.

e. Avoiding is described as withdrawal style. This approach is viewed as postponing an issue for later days or withdrawing from the situation altogether. It is regarded as a temporary solution because the problem and conflict continue to reoccur over and over again. Avoiding should be used when.

- ❖ You can not win
- ❖ Stakes are low

- ❖ Stake are high, but you are not prepared
- ❖ You want to gain time
- ❖ You want to maintain neutrality or reputation
- ❖ You think problem will go away
- ❖ You win by delaying.

Intuition: Finally, the third and final step in the ERI model is your intuition, where you brainstorm new possibilities and alternative and intuitively decide the best approach to use in a particular situation. Before you draw on your intuition, it is important to have emotions removed, gain understanding and knowledge about the situation, and recognize how you might use the different conflict resolution approaches. Lastly, after you have applied the ERI model, you can finally implement your decision by putting chosen option into action.

Arbitration Model: Here a third party neutral presides over a dispute and renders an enforceable 'Award', the powers of an arbitrator are provided for under the Arbitration and conciliation Art. Arbitration is a process where disputes, are finally settled by persons called arbitrators, appointed through a procedure agreed by the parties involved. The

Arbitration and conciliation Act (Cap A18 LFN 2004) made provision for the settlement of dispute without recourse to litigation. It is the enabling law relating to arbitration and reconciliation in Nigeria.

The Arbitration and conciliation Act has 58 sections and 3 schedules. According to section 57 of the Act, Arbitration means a commercial arbitration whether or not administered by a permanent arbitrating institution. The act provides a unified legal frame work for the fair and efficient settlement of commercial disputes by arbitration and conciliation. It also makes provision for the applicability of the convention on the Recognition and Enforcement of Arbitral Awards (New York Convention) to any award made in Nigeria or in any contracting state arising out of international commercial Arbitration.

Arbitration which was employed in the resolution of disputes in a quasi judicial environment for over the years, legislations on Arbitration were made and amended to suite the demand of trade and usage and to make the practice result oriented. Previously, Arbitration was treated by the courts as a 'poor cousin' in the administration of justice. As

was in the case of Wilco versus Swan, where the court held that arbitration clauses are void where they seek to cover certain matters reserved for the courts. Although recent cases have shown a changing attitude of the court towards Arbitration and other Alternative Dispute Resolution (ADR) processes. The supreme court decision in Kano State, Urban Development Board versus Hanz Construction Co Ltd, (1990) NSCC vol. 21 part 2 PS 399-433 reflected this change following principles which the court laid down in the practice and procedure for Arbitration proceeding in Nigeria. Again, the practice gained more credence and relevance after the promulgation of the Nigerian Investment Promotion Commission (NIPC) Decree No. 16 of 1995, which expressly provides under section 26 for dispute settlement procedures by Arbitration.

However, Arbitration though formalized through the provision of the Act, has itself not made great impact in justice delivery. The use of septuagenarian retired judges who though competent in assessment of evidence and credibility of witnesses has not helped the practice as there is the tendency for the proceedings to assume a litigation

format. Presently, the stage has shifted to Alternative Dispute Resolution (ADR) which combines all forms of dispute resolution mechanisms so that there is less emphasis on Arbitration, which is quasi judicial in nature.

Alternative Dispute Resolution (ADR) Model: Is the amicable settlement of conflicts outside court processes. It is now new to Nigeria but it's wide application, study and acceptance has made it very relevant, imperative and novel. ADR originated from Arbitration and encompasses: Mediation, Conciliation, Negotiation, Mini-trial, Rent-a-Judge, Expert Appraisal, Early Neutral Evaluation and other hybrid processes such as Med-Arb., Con-Arb. and so on and now form the bedrock for peace, cheap, fast and confidential mode of dispute resolution. Some parts of the world now run on-line dispute resolution services such as Trust Enforce in Cape Town, South Africa where disputants simply send their documents and within days the parties are able to settle their differences. Really, not all disputes should go to court. Presently, modern commercial agreements now specifically provide for ADR intervention on or before resorting to court. ADR mechanisms can be

used to resolve all forms of disputes; so why go to court? This brings the issue of enforcement, which is the base for which disputants go to court. Section 31 and 32 provide for the recognition and enforcement of Arbitratory Award while other forms of agreements through the other processes can be presented before the court and the court can adopt it as a consent judgment. The present Lagos State Civil procedure rules make elaborate provision for consent judgment and the grounds upon which it can be contested or set aside i.e. fraud, illegality and duress. Otherwise such judgment can only be appealed against. The Arbitration and conciliation Act provides that anyone can practice ADR. All that is required is acquisition of basic negotiation and mediation skills.

Negotiation Model: Is another type of conflict resolution model championed by Meredith and Mantel (1995) for resolving conflict. Negotiation is therefore the process through which two or more parties seek an acceptable rate of exchange for items they own or control. Cohen contributed in his own definition that Negotiation is a field of knowledge and endeavour that focuses on gaining the

favour of people from whom we want things. Other authors define negotiation differently, but do not appreciably extend cohen's definition. Even if no single definition neatly fits all the activities labelled "negotiation" some terms like mediate, conciliate, make peace, bring to agreement, settle differences, moderate, arbitrate, adjust differences, compromise, bargain, dicker and haggle are synonyms for "negotiate" in some instances. Most of the conflicts that involve the organization and outsiders have to do with property rights and contractual obligations. In these cases, the parties to negotiation see themselves as opponents. Conflicts arising inside the organization may also appear to involve property rights and obligations, but they typically differ from conflicts with outsiders in one important way. As far as the firm is concerned, they are conflicts between allies, not opponents.

An organization consists of interdependent parts that have their own values, interests, perceptions and goals. Each unit seeks to fulfill its particular goal and the effectiveness of the organization depends on the success of each unit's fulfillment of its specialized task. One of the

ways in which organizations facilitate this integration is to establish "lateral relations which allow decisions to be made horizontally across lines of authority". Because each unit will have its own goals, integrating the activities of two or more units is certain to produce conflicts. The conflict may, however be resolved by negotiating a solution, if one exists, that produces gains or minimizes losses for all parties. Approaching intraproject conflicts with a desire to win a victory over other parties is inappropriate. The proper outcome of this type of negotiation should be to optimize the outcome in terms of overall organizational goals. Although it is not always obvious how to do this, negotiation is clearly the correct approach.

Theories of Conflict

Kirchoff and Adams (1982) looked at this theory of conflict management from different schools of thought. These are: The Traditional school, Behavioural school and the Interactionist school.

a. The Traditional School: The traditional school believed that conflict is bad and always has negative impact on projects/or organizations. Performance declines as the

level of conflict increases and hence conflict must be avoided at all costs. Following this view-point, it is assumed that conflict is always associated with violence, destruction and irrationality. The best way therefore to handle conflict is through suppression or elimination. Under this scenario, managers were encouraged to suppress conflicts through authoritarian approach. This approach appeared to have been responsible for the development of trade unions.

b. Behaviourial School: This school believes that conflict is natural and inevitable in all organizations and that it may have both positive and negative effects depending on how it is handled. It therefore believes that conflict should be accepted and properly managed and not simply suppressed or eliminated.

c. The interactionist School: This is the most current school in this area and it takes the position that conflict is actually necessary to increase performance. It therefore encourages conflict on the basis that a peaceful, tranquil and too cooperative project organization is likely to become static, apathetic, stagnant and non-responsive to meet the challenges of change and innovation. This approach

therefore encourages managers to maintain an on-going minimum level of conflict which would be enough to keep project teams self-critical, viable, creative and innovative.

Types/Kinds or Levels of Conflict:

Conflict in a project setting can be viewed from four different levels. These are: Intrapersonal level, interpersonal level, intragroup level, and intergroup level

a. Intrapersonal Level: This is known as role conflict and it arises from unmet personal or professional expectations within the individuals. It reduces the motivation and productivity of the individual but does not affect the project in general if the individual does not influence other members of the team negatively.

b. Interpersonal Level: This is the conflict that occurs between specific team members or between a member and the rest of the team members. The major causes of this are normally differences in personality, style and competing personal ambitions of the team members. The existence of intrapersonal conflict within the group can give rise to this.

c. Intragroup Level: This is a conflict between a person and the team. It may also occur when what the project manager stands for differs from those of the project team. When this happens, the group position normally wins over the individual position.

d. Intergroup Level: This is a conflict that arises between various groups with the project team or between the project team and groups outside the team. Interpersonal frictions normally give rise to this.

2.4 CHALLENGES BETWEEN CLIENT AND CONTRACTORS

One of the challenges before client (Government) essentially is to construct quality roads using project parameters of time, cost & quality for her citizenry. The symbiotic relationship between client and contractor, contractor and workers, and worker and worker must be recognized and communicated. There is no blueprint for doing so. Government differ, contractors differ and workers differ. But experience and reflection suggest that, to have an enduring positive effect of conflict, certain strategies are worth considering as part of an integrated strategy of

managing client-contractor, contractor-worker and worker-worker relations.

To this end; contractor must recognize the fact that they are under the Government of the state, they should accept the fact that several other contractors would have loved to handle the contract. The tenor of client-contractor relations can then be wrongly interpreted by the contractor as foot dragging in payment for the government and by the government as pushy for the contractor. Client which is the government on the other hand, must recognize that contractors are their customer, as such, the law of contract should be kept to avoid unwarranted conflict. The ideal client and contractor relationship should be characterized by what Shodimu (2010) refers to as a fine blend of legalism and pragmatism.

Attempts have been made by Filley (1975) to unveil some of the positive effects of conflict situations. Kirchoff and Adams (1982) argued that while effect could be positive, it could equally be negative. Conflict situations should be either resolved or used beneficially. Conflicts can have positive or negative effects for the organization,

depending on the environment created by the manager as she or he manages and regulates the conflict situation.

According to **Filley (1975)**, **positive effects of conflicts if properly managed are:-**

- ❖ **Diffusion of more serious conflicts:** Games can be used to moderate the attitudes of people by providing a competitive situation which can liberate tension in the conflicting parties, as well as having some entertainment value. In organizations where members participate in decision making, disputes are usually minor and not acute as the closeness of members moderates belligerent and assertive behaviour into minor disagreements, which minimizes the likelihood of major fights.
- ❖ **Stimulation of a search for new facts or resolutions:** When two parties who respect each other face a conflict situation, the conflict resolution process may help in clarifying the facts and stimulating a search for mutually acceptable solutions.
- ❖ **Increase in group cohesion and performance:** When two or more parties are in conflict, the

performance and cohesion of each party is likely to improve. In a conflict situation, an opponent's position is evaluated negatively, and group allegiance is strongly reinforced, leading to increased group effort and cohesion.

- ❖ **Assessment of power or ability:** In a conflict situation, the relative ability or power of the parties involved can be identified and measured.

Kirchoff and Adams (1982) Negative effect of conflict

It is a well known fact that if a conflict is not properly managed, it can cause trouble and friction among team members which can lead to low productivity. Some of these negative effects of conflicts are: -

- ❖ Impediments to smooth working
- ❖ Diminishing output
- ❖ Obstructions in the decision making process
- ❖ Formation of competing affiliations within the organization.

2.5 AN INTERFACE MATRIX FOR EFFICIENT PROJECT PERFORMANCE

Akpan and Ukairo (1998) in their research opined that project performance requires an appropriate

sponsor/owner's involvement for efficient project performance. The owner as the ultimate risk bearer must play an active role in project effort for the above objectives to be achieved. For this to be possible there must exist an appropriate organizational structure. The choice of the project organizational structure, however is influenced by the choice of contract type and contract strategy. An interface matrix which contains the recommended combinations of the different contract type, contract strategies and the sponsor/owner's organizational structure and surveillance techniques that makes for owner's involvement has since been developed. The need for the existence of a collaborative environment for the project effort and curtailing of the negative tendencies encouraged by the different contract types are factors influencing the balance on the choice of the appropriate contract type, contract strategy and sponsor/owner's organizational structure/surveillance type.

CONTRACT TYPE

Several attempts in this direction have been made but such efforts have not been very comprehensive. Veld et al (1989) acknowledged that different contract types produce different contractor's attitude. Allen (1989) dwelt on

contract strategy and owner's organizational structure while Anton de wit (1986) used transaction-cost approach in choosing the organizational structure with respect to contract strategy. Hubbard (1990) affirmed and identified the major causes of project failure as inadequate organizational structure and recommended the use of a pure project structure as the best solution but ignores the cost/schedule implications when the pure project structure is inappropriate for a given contract strategy and contract type. Richie (1982) and Vickland (1980) concentrated on the size of owner's project management team which according to them depends on the type of project structure and contract strategy.

Before efforts are made towards the interface matrix for efficient project performance, the constituent part must be clearly understood and appreciated. A full and comprehensive treatment could be found in Akpan and Ukairo (1998). Contract types consist mainly of fixed cost contract or lump sum, cost plus or cost reimbursement contract and Guaranteed maximum price contract and the fourth type of contract is package deal.

PROJECT CONTRACT STRATEGY

Project contract strategy defines the contractual relationships between the owner and the contractor(s) on one hand and between the different contractors working on the same project on the other as passive participation of the client can be very costly indeed in terms of poor quality of work, cost/time overruns and even project abandonment. Those normally mentioned as contract strategies are design-build strategy, project management strategy, general contractor strategy, prime specialty contract strategy and In-house construction.

PROJECT ORGANIZATIONAL STRUCTURE

The organizational structure ranges from the pure functional type at one extreme to the pure project type at the other extreme. In between these two, we have matrix organization which is described as the policy, procedure and work relationship resulting when a project team headed by a project manager is superimposed on an existing hierarchical structure. There are three basic types, each type addressing the relative influence of the project manager and the functional manager on the project. Type A normally called the functional matrix is a case where an individual is formally appointed to oversee the project across different functional areas with functional managers retaining primary

responsibility for the different work packages. Type B known as Balanced Matrix is where a person is assigned to oversee the project and relate to functional managers on equal basis while Type C generally called project matrix is where the project manager is charged with overall responsibility of completing the project while the role of functional managers is limited only to assigning personnel as and when needed and also providing adversary expertise.

PROJECT SURVEILLANCE

Project surveillance provides professional advice and guidance throughout the project life cycle to the project sponsor/owner thus enabling him play an active role in the project effort. The activity is often concerned with organization/management, programme/progress, financial/cost and resource issues surrounding a project. There are two of them that can be utilized, Project Performance Audit (PPA) and Project Management Oversight (PMO). PPA is a technique whereby project monitoring is conducted intermittently throughout the life of the project. This can be done at different stages in the life of the project, pre-project, in-project and post-project while PMO does its monitoring continuously from project conception through operation to maintenance. It is very comprehensive and

therefore very costly and takes into consideration internal and external environment of a project incorporating the form of services provided by PPA. It adopts a pre-emptive approach to problem solving, focusing on the people, the process and the tools employed in meeting the project objective.

INTERFACE MATRIX

A balance between the influences of these four elements: namely organizational strategy, organizational structure, surveillance and contract types ensure that the elements bear positively on the outcome of a project. Those factors which influence the balance between the different elements are cost, required level of owner's control, in-house capability, level of management at which intra-organizational integration is carried out, and need to control contractor's attitude. Having considered the four elements and the factors which can influence the balance, it is possible to develop the interface matrix as shown below. The matrix ensures the availability of knowledge and experience for the project planning, implementation and control including the management of the environment. When a project owner conceives the need for a project, the proper step is to hire appropriate surveillance contractor

depending on his in-house capacities. Having decided on this, he can choose the other three elements in sequence. For example, where the owner decides on PMO as his surveillance technique, guaranteed maximum price as the contract type, the owner can either choose the functional manager, functional matrix or balanced matrix as his project organizational structure. The same procedure is followed where the owner chooses his project strategy and contract type. The shaded cell represents the “envelope of balance” most acceptable. Matrix cells left blank or with a minus (-) will not support a balance between the four elements while the cells with plus (+) sign provide an owner involvement costlier than what is necessary. Organizational structure/surveillance type constitutes the mechanism for owner project administration while contract type, contract strategy, organizational structure and project surveillance constitute the mechanism for implementing the owner’s project objectives.

GUARANTEED MAXIMUM PRICE	COST PLUS	FIXED COST	STRUCTURE/ SURVEILLANCE	DESIGN- BUILD	PROJECT MANAGEMENT	GENERAL CONTRACTOR	PRIME SPECIALTY	IN-HOUSE CONSTRUCTION
	—		FUNCTIONAL MANAGEMENT + PMO			—		
	—		FUNCTIONAL MATRIX + PMO				—	
			BALANCED MATRIX + PPA	+				—
+		+	PROJECT MATRIX + PMO		+			
+		+	PROJECT MATRIX + PPA		+			
+		+	PURE PROJECT + PPA			+		

Interface Matrix for Contract Strategy, Organizational Structure, Project Surveillance and Contract type

2.6 CONTRIBUTIONS BY OTHER AUTHORITIES

In expressing the need for workers representatives to be coopted when final decisions of the organization are being made in order to reduce conflict seems to be certain, where workers begin to take part in and the traditional belligerency of trade unions are bound to be called in

question. On the other hand, workers' participation in management is likely to lead to a greater appreciation of the problems of management by the workers end, therefore, less friction between labour and management". Workers only exhibit habits that are contrary to the terms of the contract of their employment when they feel they are not fed with enough information concerning the activities of the organization with their participation in boardroom deliberations, therefore, any ill-feeling alienation of any sort will be a calculated sabotage.

Oloko (1974) buttressed this fact in a wider dimension when he opined that "workers are concerned about communications, continuity of employment, compensation, training, fair play, status and belonging. We must not let aloofness, harshness or counsel". He added that "the bullying manager or supervisor is a dangerous one. As far as he remains on seat harmony will not prevail". A supervisor could be escalated with the contortion of the face or refusal to listen to the complainant. Conceding with the view of Oloko Selekman (1974) asserted that "unless and until we apply ourselves to learning why conflict in industry

has proved so much easier than cooperation, we can hardly launder a promising or sound effort to make collective bargaining work effectively from day to day". No problem could be solved until its remote and immediate causes have been discerned. Through effective communication and human relations problems that invite conflict can be easily identified for quick correction. Emphasis needs to be placed on communication and human relations at the primary level that is, between workers and foremen in the plant because it is conflict breeding grounds. Conflict resulting at the plant level reinforces selfesteem and good relations in the work place.

Ifedi (1987) said "effective communication based on what to say, when to say it, to whom to say it to and how to say it. The will to communicate should be as harmful as too little. Tell the people what they need to know but do not swamp them with information and exhortation". Ifedi trades with the theory of minimal information which is of the belief that workers need information which will be enough to enable them perform their assigned tasks. Benevolence in releasing organizational information breeds under conflict.

Such approach is seen by workers as a right rather than a privilege. Workers in this situation would even probe to see if there is any modicum of information unreleased. Any attempt, therefore, to change the system will be resisted by the workers.

But whatever happens Imo (1989) is of a general knowledge view that workers should be told what work they should perform, how much work they should do and the conditions under which they should be done. On the other hand, the worker tends to regard management as being solely interested in profiting at the expense of labour and they, however, tend to see the prosperity of management and the well-being of the company in relationship to their welfare. They, therefore, demand for a larger cut of the pie. This is the crux of the cat and dog relationship, between workers and their employers- the bickering over compensation and benefits. This cat and dog relationship in every industrial establishment could be banished by the employers of labour when they go beyond their self imposed prerogative to bettering the welfare of the workers by showing them that their sweats are not cheaply bought

through recognition, accommodation, higher pay and increased responsibility.

An efficient and highly developed machinery of negotiation can easily be ruined by ineptitude and lack of initiative and imagination on the part of those charged with the responsibility of helping. Many of the labour agreements that come out of the negotiating councils or committees are not more than records of meetings. They are often imprecise and ambiguous. They may include issues pertaining to conditions of work but mainly they cover procedural matters. As a result of its ambiguous nature, they are not put into practice and nevertheless threaten the harmonious existence of the industry.

Chuma (1987) has opined that workers education helps to reduce the area of labour-management conflict and promotes the substitution of reasoning and conciliating for emotions and aggression. He further says the creeping ruthlessness and injustice among employers, both in the public and private sectors should be nipped in the bud. Recent trends show an increasing incidence of premature redundancy and irregular payment of salaries and terminal

benefit to workers. These practices undermine the workers basic conditions of service and thereby provoke resistance. Workers education helps to create awareness and sound minds which assiduously contributes sound judgements of any prevailing economic circumstances. Any working environment that accommodates and produces soundness of the mind will enjoy peace. Every worker exchanges his energy with a reward he believes will enable him satisfy his most needed wants. Workers, therefore, show their resistance to the aforementioned situation in diversified forms. While expressing ways workers react when management fails to adhere to the collective bargaining terms, Akerele (1991). Said "any organization that tends to dehumanizes its workers by not complying with the terms of collective bargaining is bound to have serious labour problems in form of absenteeism, punctuality, absconding from duty and high labour turnover and thus have negative effect on their productivity. In furtherance to this assertion Okpedi (1991) in an attempt said "if Nigeria industrialists want to compete favourable with foreign investors, they should adhere strictly to the terms of their negotiations to

write home about". Though high productivity cannot be attributed to industrial harmony alone, but nonetheless, it is a strong contributor to high productivity in any existing economy.

Okorie (1990) observed that management has prerogatives and union has rights. He further said that two parties should agree first on areas of joint decision. A slight variation is the one said by Miner and Miner (1990) that there are some prerogative as well as union rights. It is however a good company's policy to consult in taking final decision. But practically, here you draw a line between rights and prerogatives which depends on the relative strength of the parties. The emphasis on union right and company prerogatives seems more reminiscent of the colonial era than the current period.

Barki and Hartwick (2001) tested a model of how members of information systems development (ISD) projects perceive interpersonal conflict and examined the relationships between interpersonal conflict, conflict management styles and ISD outcomes. In there work, interpersonal conflict was defined as "a phenomenom that

occurs between interdependent parties as they experience negative emotional reactions to perceived disagreements and interference with the attainment of their goals". The results suggest that individuals' assessments of interpersonal conflict were formed based on disagreement, interference, and negative emotion. Interdependence was not a factor in their assessment. Negative emotion was found to be a significant part of an individuals perception of interpersonal conflict. Although conflict management styles were shown to have positive effects on ISD outcomes, the negative effects of interpersonal conflict on the outcomes were not alleviated. He further stressed that regardless of how the conflict was managed or resolved, the impact of interpersonal conflict was perceived to be negative. He concluded that management and satisfactory resolution of interpersonal conflict are important. However, prevention of interpersonal conflict should be the greater focus.

Al-Tabtabai, Alex A.P. & Aboualfotouh (2001) argued Kerzner, John Wiley & Sons (2001) in their style of conflict resolution which they called modes and propose a conflict resolution technique using a cognitive analysis approach.

This approach identifies a main source of conflict as the cognitive differences between parties. Feedback is presented that gives analysis of each individual's judgement and comparisons with the counterpart's judgement. This cognitive feedback provides insight to conflicting parties and gives them an opportunity to reach an acceptable resolution to the conflict. The proposed systematic methodology to conflict resolution identifies and measures the cues, distal variable and judgements and determines the relationships between these variables. The six steps of this methodology are listed below.

- ❖ Identification of the conflict domain
- ❖ Generation of conflict cases
- ❖ Exercise of judgement
- ❖ Analysis of the result
- ❖ Communication of the judgement differences (cognitive Feedback)
- ❖ Negotiation Among conflicting parties.

The use of the cognitive analysis approach resulted in more agreement among the parties in conflict. Cognitive feedback provided information on reasons why the disagreement

occurred among the parties and on areas that needed to be addressed to reach an agreement. This approach allowed the project members involved in the conflict to concentrate on the real differences that provoked the disagreement rather than only discussing the effects of the conflicting situation. The findings according to Al-Tabtabai & Colleagues suggest that the use of cognitive feedback can be effectively applied to conflict resolution.

Lloyd (2001) supported Kirchoff and Adams (1982) in their contemporary theory that recognizes conflicts between human beings as unavoidable and that they emerge as a natural result of change and can be beneficial to the organization, if managed efficiently. And considers innovation as a mechanism for bringing together various ideas and viewpoints into a new and different fusion. Lloyd (2001) added that deconstructive conflict occurs when a decision has not been found and the problem remains, energy is taken away from more important activities or issues, morale of teams or individuals is destroyed, and groups of people or teams are polarized. He further stated that destructive conflict has a predictable pattern known as

the Drama Triangle. By learning how to identify these unproductive roles and how to effectively handle each role player, managers can prevent some conflicts from occurring and resolve those that do. He also said that most individuals knows how to assume persecutor (aggressive behaviour), victim (non assertive behaviour) and Rescuer (either non assertive or aggressive behaviour) roles. These roles are learned in early childhood and are used throughout adulthood. They involve the perception of oneself or someone else as inadequate or not acceptable. The aggressive and non assertive behaviours that are present in these roles lead to win-lose outcomes and do not provide an opportunity for a win-win resolution. He also said that, it is important for a project manager to understand the dynamics of conflict before being able to resolve it and the internal characteristics of conflict include perception of the goal, perception of the other, view of the other's action, definition of problem, communication, and internal group dynamics.

Filley (1975) affirmed and identified eight main sources that could initiate conflict in an organization. They are

Ambiguous jurisdiction, Goal incompatibility and conflict of interest, Communication barriers, Dependence on one party by another group or individual, Differentiation in organization, Association of the parties and specialization, Behaviour regulation, and unresolved prior conflicts.

De Bono (1985) argued Filley (1975) in his research of sources of conflict and opined that the major sources of conflict are found in the human resource. He posited that conflict emanate from more than one source as such, sources of conflict originate from people disagree. People disagree for a number of reasons like people see things differently because of differences in understand and view point, people have different styles, principles, values, beliefs and slogans which determines their choice and objective, people have different ideological and philosophical outlooks as in the case of different political parties, people have different status, and people are supposed to disagree under particular circumstance, such as in sports. He still maintains that conflict can erupt when people are concerned with fear, force, fairness or funds.

De Bono (1985) in another research opined that when two groups or individuals face a conflict situation, they can react in four ways.

- ❖ Fight,
- ❖ Negotiate
- ❖ Problem solve and
- ❖ Design

Fight: According to him, is not a beneficial, sound or gratifying approach to dealing with a conflict situation as it involves "tactics, strategies, offensive and defensive positions, losing and winning grounds, and exposure of weak points". Fighting as a way of resolving a conflict can only be useful in courtroom situations, where winning and losing becomes a by-product of the judicial process.

Negotiate: Is one of the ways to react when faced with conflict situation. Negotiate, towards a settlement with the other party. Negotiations take place within the prevailing situation and do not involve problem solving or designing. Third-party roles are very important in bringing the conflicting parties together on some common ground for negotiations.

Problem solve: Is another way which involves identifying and removing the cause of the conflict so as to make the situation normal again. However, this may not be easy. It is also possible that the situation may not become normal even after removing the identified cause because of its influence on the situation.

Design: It is the last but not the least in an attempt towards creativity in making the conflict situation normal. It considers conflicts as situations rather than problems. Designing is not confined to what is already there, but attempts to reach what might be created given a proper understanding of the view and situations of the conflicting parties. The proposed idea should be appropriate and acceptable to the parties in conflict. A third party participates actively in the design process rather than being just an umpire.

Turner and Weed (1983) posited that organizational conflicts usually involve three elements, which have to be appropriately matched through necessary organizational arrangements in order to resolve the conflict. These are power, organizational demands and person's self-esteem.

Power: Power in his research is the capacities and means that people have at their disposal to get work done. Power includes budgetary discretion, personal influence, information, time, spaces staff size and dependence on others. It used efficiently, power creates an atmosphere of cooperation, but can generate conflicts when misused, withheld or amassed.

Organizational demands are the people's expectations regarding a person's job performance. Usually such expectations are high, and making them rather unrealistic. When these expectations are not fulfilled, people feel disheartened, angry, let down or cheated. Consequently, conflict situations can arise.

Finally, worth refers to a person's self-esteem: People want to prove their worth in the organization. Superiors control employee's pay, performance rating, performance and appraisal etc. How much of these are received by a person reflects their worth. An individual may also feel loss of worth if some basic needs are not fulfilled. Generally, conflicts arise from mismatches between power, organizational demands and feelings of personal worth.

2.7 REVIEW OF CONFLICT ASSOCIATED WITH ROAD PROJECT IN IMO STATE

Conflict is as old as the world itself and are inherent in project management, therefore cannot be avoided. Some of the contemporary challenges in road construction in Nigeria particularly Imo State are with respect to client (Government)/ contractor relationship, contractor/worker (staff) relationship, worker (staff)/worker (staff) relationship and community (host)/contractor via Government relationship.

Land Issues: One of the critical issues in road construction in Nigeria is land matter. For a road to be constructed, Government has to approve it. The Government is vested with the responsibility of land acquisition for public use. Considering the large expanse of land required to construct roads, many families and communities lose their land to Government road located in their domain. Many also complain of lack of compensation or its inadequacy. As a result over time, villagers tend to prevent contractor from undertaking road projects. This has generated a lot of tension between contractors and their host communities.

Quality of leadership: Another critical factor in road construction is the quality of leadership. Traditional rulers, village heads, presidents of town unions, women and youth leaders who are educated and exposed are better positioned to articulate community concerns and present same to the Government. They can also effectively analyze issues, disagree with or appreciate Government position on any matter affecting their communities. Road construction project is most likely to be enhanced under a united, enlightened, selfless leadership than under a fractionalized, uneducated, despotic and dubious leadership.

On the part of the Government who are firm and fair, humane and principled, upright and accommodating are likely to relate cordially with members of host communities. Conversely, Government who are rigid, distant and corrupt, who regard members of the host communities as parasites that must be ignored or at best tolerated are likely to have problem with them.

On the part of the client (Government) versus the contractor. Government needs to emulate other country's good strategy to avoid unwarranted conflict between them

and contractors. Infact as a matter of facts the issue of highly coded language of 10% or 15% should stop forth with. This has posed problems in the society. If contractors ask Government why 10% or 15%, delay in mobilization, poor quality material and human resources, wrong timing, etc Government in reply can delay more or deny payment, can tactfully terminate the contract etc. While, if Government ask contractors why delay in construction, poor quality etc contractors in reply will remind the Government of the 10% or 15% coded language, delay in payment, bad weather, variation etc. Consequently, these type of out-dated practice has grossly affected the quality, time and cost of many roads project in a negative way.

Conduct of Host Community and Contractors/Staff:

Due to the nature of road construction work world wide, contractors and her staff reside in the host communities. Their conduct and behaviour in their areas of residence sometimes affect the relationship between the contractor and host communities. If they are generally well-behaved and respect the norms and traditions of their host communities tension will be minimized. However, if they

indulge in anti-social activities such as disrespect for local norms, cultism, drunkenness, wild parties, debauchery, armed robbery and prostitution, the host communities will react negatively towards them. Likewise the host communities, if they respect the norms, constitution and traditions of their land tension will also be reduced. The history of road construction in Nigeria is replete with violent conflicts between the contractors and host communities. Some of these clashes resulted in numerous deaths, injuries and wanton destruction of public properties.

Communication: An organized communication network are encouraged to identify problems, challenges, land boundaries, discuss expectations etc. The relationship between contractor and communities would be positively enhanced if there exists a well established channel of communication between the parties. The existence of regular and sustained communication platform will promote an unbridled, robust interaction between the two. In using such medium contractor policies that affect host communities (e.g employment, contact, compensation, etc) are explained. Through such a platform as well, volatile

issues that could generate discord are discussed and nipped in the bud. In addition, such forum further provides opportunities for contractors to seek community support and protection for their lives and equipments.

Employment: This is one of the greatest challenges threatening the society-unemployment. It is true that due process need to be followed during employment and most establishment employ through their head office. However, failure of the contractors to meet the ever increasing demand of host communities in the area of employment even if it is casual always generates acrimony between the two parties.

CHAPTER THREE

3.0 RESEARCH DESIGN & METHODOLOGY

3.1 INTRODUCTION

Basically, this chapter dwells so much on the systematic process, procedure and technique for the analysis of the “evaluation of conflict management strategies in the delivery of road project”. Imo State Roads were used for the study of the existence of conflict and wide range of road construction activities that are being undertaken by many local, State, National and international companies. It also has other features which this research seeks to know and address.

3.2 RESEARCH DESIGN

The methods of research design adopted for this study are an ex-post facto and a survey which are defined by Nworuh (2004). Ex-post facto means after the fact (project) while survey means an investigation of the opinion behaviour or project. Okigwe-Umuna-Onuimo federal road maintained by Federal Roads Maintenance Agency (FERMA) was used by the researcher as an ex-post facto research. The information obtained from ex-post research were not

manipulated hence the researcher only extracted what had happened during execution. The variables obtained from the ex-post facto design were used for the construction of Work Breakdown Structure (WBS), activity scheduling and network analysis through Critical Path Method (CPM), determination of earliest starting time and other critical indices, determination of resource requirement per activity and work control of activities. The researcher compared already built schedule with planned scheduled for a critical assessment of the variables in order to determine and advice our audience on better managerial practice.

As a survey, the researcher visited some of the road project sites and offices for on the site observation and assessment. Dualization of inner ring road and construction of Bridges and fly-overs at Okigwe road Owerri by Raycon & Co Nigeria Ltd and road construction at Ihioma-Eke Ututu road Orlu by Monier Construction Company Nigeria Ltd (MCC) were on-going. A well structured and standardized questionnaire on evaluation of conflict management strategies in the delivery of road project were used. The questionnaire was designed based on five point likert scale

and were administered to the top, middle and low management of the companies.

Personal interviews were also held with some project managers and affected host community members. However, interviews were used only when and where the efforts of the researcher to administer questionnaire proved unsuccessful. Considerable pieces of information were also obtained from this method and each respondent narrated in practical terms their understanding of the variable under study.

3.2.1 STUDY AREA

This study was conducted in Imo State, the South Eastern Nigeria. It has a population of about 3 million. The state is made up of three-geo-political zones namely Orlu, Owerri & Okigwe Zone. The socio-economic characteristics of the study environment are mixed and diverse.

3.3 POPULATION OF STUDY

Construction companies operating in Imo State represent the population of this study. Records from the State Ministry of Works indicate that there are about twenty nine (29) registered construction companies operating in this State. Eleven (11) of them have their offices in Owerri. A total of fifty (50) questionnaires were distributed to three

different companies and thirty (30) responded. However, this number represents the response rate of population and are used as basis for inferences, deductions and conclusion with respect to this study. A study of this nature cannot cover such a population hence sampling procedure. A sample of the registered construction companies operating in Imo State is attached as Appendix I.

3.4 SAMPLING DESIGN AND PROCEDURES

Sequel to the researcher's inability to examine all the unit of the population in this study, two sampling techniques were adopted. They are simple random and judgemental sampling. The simple random was used to administer questionnaires to staff and the judgmental sampling helped the researcher to select three roads and three companies operating in Imo State.

3.5 METHOD OF DATA COLLECTION

For the purpose of this research, this section will examine how data are collected.

3.5.1 SOURCES OF DATA

Two main sources of Data were used for this research- the primary and secondary sources of data. The secondary sourced data were obtained from the published works,

reports, text- books, lecture materials, journals, world bank materials, construction firm, government establishment, libraries and internet.

The primary sourced data on the other hand were obtained from a well structured and standardized questionnaires, interviews, and on –site observation & assessment.

3.5.2 INSTRUMENT FOR DATA COLLECTION

Opinions and responses of respondents on evaluation of conflict management strategies in the delivery of road projects were obtained through questionnaire, interviews & observations. A sample of the questionnaire is attached as Appendix II.

3.5.3 METHOD OF ADMINISTRATION

Questionnaires were administered to contractors, staff and project managers. Personal interviews were granted to some project managers, environmentalists and host communities. And an on-site observation was also carried out to ascertain what happened, what was going on and what could occur in future.

3.6 METHOD OF DATA ANALYSIS

This research will adopt Multiple Regression Analysis Method and or technique to analyze the data.

3.6.1 MULTIPLE REGRESSION ANALYSIS

Advanced statistical technique called Multiple Regression Analysis was used to establish the degree of relationship between some of the contending claims. Conflict management strategies in this research serves as independent variable denoted with X while delivery of road project serves as Dependent variable denoted Y. The following four research questions were examined with the techniques

1. How successful are conflict management strategies in road projects?
2. Which are the road projects?
3. How effective is alternative dispute resolution in conflict?
4. How effective are the conflict resolution models used in the management of road development projects?

Sequel to the above questions, null hypothesis were constructed to provide bases for testing the relevant assumptions. To test the influence of conflict on the

management strategies in the delivery of road project.

Three questions of interest are examined.

- 1 To what extent does conflict exist between a contractor and client?
2. To what extent does conflict exist between a contractor and her worker?
3. To what extent does conflict exist between a worker and a worker?

The Multiple regression as stated by Nworuh (2009) presented in its operational form use in this research thus.

$$Y = a_0 + \beta_1 X_1 + \beta_2 X_2 \dots\dots\dots + \beta_n X_n + e_0$$

Where

Y = Delivery of road projects

a_0 = The Constant term

$\beta_1 - \beta_n$ = The relationship coefficients

+ = a sign which indicates the nature of the relationship

x_1 = Sources of conflict (SOC)

x_2 = ADR remedy for conflict (ADRFC)

x_3 = Effective conflict resolution models (ECRM)

e_0 = The error term in estimation.

The calculation is done by the window version of statistical package for social science (SPSS 10.0) - a computer software designed based on the multiple regression technique.

The regression parameters (β_1) are estimated using the formula:

$$\beta_1 = \frac{N \sum X_i Y_i - (\sum X_i) (\sum Y_i)}{N \sum X_i^2 - (\sum X_i)^2}$$

On the other hand

$$a_0 = \frac{\sum Y_i - \beta_1 \sum X_i}{N}$$

The correlation coefficient (R) which measures the magnitude of the relationship between the variable (Y) and the group of independent variables ($X_1, X_2, X_3, \& X_4$) is determined using

$$R = \frac{N \sum X_i Y_i - (\sum X_i) (\sum Y_i)}{\sqrt{[N \sum X_i^2 - (\sum X_i)^2] [N \sum Y_i^2 - (\sum Y_i)^2]}}$$

Also the coefficient of determination (R^2) which measures the extent of the variation in the dependent variable (Y) that is being explained by the variations in the independent variables (X_1, \dots, X_n) is given by the formula:

$$R^2 = \frac{SSR}{SST}$$

Where SSR (Sum of Squares due to regression) is given by:

$$SSR = \beta_1 = \left[\sum X_i Y_i - \frac{\sum X_i \sum Y_i}{N} \right]$$

And

SST (Total sum of Squares) is given as:

$$SST = \sum Y_i^2 - \frac{(\sum Y_i)^2}{N}$$

However, the sum of squares due to error is given by

$$SSE = SST - SSR$$

In testing the stated hypotheses, the F-test and t-test will be used.

The F-test statistics is calculated using the formula:

$$F^*_{cal} = \frac{MRS}{MSE}$$

Where MSR (Mean Squares due to regression) is given as:

$$\frac{SSR}{k}$$

Where k is the number of independent variables.

On the other hand MSE (Mean Square due to error) is given by

$$\frac{SSE}{n-k-1}$$

Where "n" equals the number of observation of the sample size.

All the above parameters will be summarized using an integrated computer tool in a table of Analysis of Variance (ANOVA) as follows:

ANOVA TABLE

Source of variation	Sum of Squares (SS) Σ	Degree of freedom (df)	Mean square (MS)	Variance Ratio (F-ratio)
Regression	$SSR = R^2 \sum Y^2$	K	$MSR = \frac{SSR}{K}$	$F^* = \frac{MSR}{MSE}$
Error	$SSE = \sum Y^2 - R^2 \sum Y^2$	n-k-1	$MSE = \frac{SSE}{n-k-1}$	
Total	$SST = \sum Y^2$	n-1		

DECISION RULE FOR ACCEPTING HYPOTHESIS

The stated hypotheses will be accepted or rejected based on the following decision rules:

F-test:

Accept the null hypothesis (H_0) if $F^* < F_{1-\alpha} ; k, n-k-1$ degree of freedom, where α = the chosen significance level which for the purpose of this study will be 5% or 0.05 otherwise the null hypothesis (H_0) is rejected. Where $F^* < F_{1-\alpha} ; k, n-k-1$ is the critical value obtainable from the standard F-distribution table.

t-test:

The null hypothesis (H_0) i.e $b_i = 0$ is accepted at $\alpha/2$ level of significance and n-k-1 degree of freedom if

$$t^*_{cal} < t_{1-\alpha/2, n-k-1} \text{ d.f}$$

Otherwise the null hypothesis (H_0) is rejected in favour of the alternative hypothesis (H_A), i.e. $b_0 \neq 0$. Where $t_{1-\alpha/2, n-k-1}$ d.f $n-k-1$ is the critical value obtained from the t-distribution table.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

4.1 INTRODUCTION

In this chapter, data generated from the respondents were presented and analysed. In order to quantify the responses more appropriately, the researcher employed statistical tool as mentioned in chapter three.

The researcher used last part of this chapter to test the hypothesis formulated in chapter one of this thesis. The result of the test will form the basis for either rejecting or accepting preconceived motion of the variable being tested (hypothesis).

4.2. CRITERION GROUP RETURNS & ANALYSIS (SECTION A QUESTIONNAIRE)

This study recognized Raycon & Co Nigeria Ltd, Monier Construction Company (MCC) and Federal Road Maintenance Agency (FERMA) in the design of this thesis. The questionnaire spread by Researcher is as shown in table below.

Table 4.1: Questionnaire Distribution and Collection

Companies	Number Distributed	Number Returned	Number not Returned	% of No Returned	% of no not Returned
Raycon & Co Nigeria Ltd	20	12	8	$\frac{30}{50} \times \frac{100}{1}$	$\frac{20}{50} \times \frac{100}{1}$
Monier const Coy (MCC)	17	10	7		
FERMA	13	8	5		
Total	50	30	20	60%	40%

From the 50 questionnaires distributed to three construction companies operating in Imo State, a total of 30 respondents returned their questionnaire giving a return rate of 60%. The questionnaire reveals that 24% of the respondents belong to the Raycon & Co Nigeria Ltd, 20% from monier construction company and 16% of the respondents came from Federal Roads Maintenance Agency (FERMA).

The analysis of respondent by designation shows that the respondents who participated in the study are involved in the management and construction of roads, particularly in Imo State. It is believed that this management cadre and experts have better and practical knowledge of the variables under study. About 70% of the respondents have been

involved in the middle management of the construction while 77% have been involved for less than one year. About 3%, 30%, 17%, 40%, 10% of the respondents are rated as FSLC, O'level, OND, BSc and Postgraduate holders respectively.

4.3 DATA PRESENTATION AND ANALYSIS

The data collected in this study yielded both quantitative and qualitative data.

4.3.1 SECONDARY DATA ON EVALUATION OF CONFLICT MANAGEMENT STRATEGIES IN THE DELIVERY OF ROAD PROJECTS

Some data based on published statistics from Imo State Ministry of works and related literatures are presented in order to empirically evaluate conflict management strategies in the delivery of road project.

Table 4.2 Report of Road Projects in Imo State

Year	Road contact Awarded	Contracting firm	Contract Status		Conflict source	Resolution		
			Complete	Not complete		Court	Arbitration	Out of court
2003	Okwelle dikenafai urualla road	Hopel Nig Ltd		√	Structural imbalance (conflict class) and there was no proper drainage system	-	Re-awarded	-
2003	Umuneke-obike Ndashi Rd Ngor Okpala	Melbourn energy		√	Ambiguity in contract document, treat to important values	√	-	-
2004	Naze Nekede Ihiagwa Obinze Road	Harded & Enic Group of Companies		√	Scare resources, Ambiguity, in client brief Differing goal & poor quality job	-	Re-awarded	-
2004	Works layout			√	No proper drainage system, poor coordination run off as a result of rainfall	-	-	-
2007	Nkwere Umudi Road	Grand-star Ltd		√	No proper design used as Trunk B road instead of A. There was communication/information issues	-	-	-
2007	Orlu Ihitte Owerri Obinugwu Road	n-Steven construction company	√		-	-	-	-
2008	Yar Adua Road Owerri	Coduc Nig ltd		√	Unsuitable soil was not removed	-	They were called back to reconstruct the rd. which they did & their retention fee were paid to them.	-
2008.	Naze Nekede Ihiagwe Obinze Road	Melbourn		√	Bad construction work, differing goal, structural imbalance and communication/information issue	-	-	-

Based on the above, efforts are being made to resort to Arbitration and other methods of dispute resolution in the country particularly Imo State. It should be noted that Alternative Dispute Resolution (ADR) is largely in tandem with the traditional method of dispute settlement, which had served African societies so well before the advent of the received English system of adjudication. Arbitration and ADR aims at discouraging delays and degeneration of the adversarial culture in the attainment of justice. In an atmosphere where the amicable resolution of disputes thrives, healthy relationship between parties exist like the above table shows that most of the conflict were resolved out of court (ADR). Therefore ADR can be considered as an instrument of human development.

With the advent of Democracy in the nation the former Governor of Imo State Dr. Achike Udenwa Udenwa awarded up to eighty eight (88) road contracts in Imo State. Though some of the road were not completed within his regime Governor Ohakim also awarded over fifty (50) road contracts in his regime in Imo State which are still in use till

today. On the other hand, some of the roads were not completed.

There is increasing empirical evidence to suggest that the management of road projects in Imo State can be more effective when properly monitored and evaluated. Road projects were conceptualized as a development/infrastructural project to help solve the economic/social challenge of the user in Nigeria and Imo State in particular. The Report prepared by the state ministry of works shows that some roads are poorly constructed though completed and some are not completed. I can therefore infer that some roads needs to be re-awarded, maintained and properly monitored. It can therefore be said that the Government strategic objectives of awarding road contracts were not fully realized since all are not actualized within the stipulated time.

4.3.2 PRIMARY DATA ON AN EVALUATION OF CONFLICT MANAGEMENT STRATEGIES IN THE DELIVERY OF ROAD PROJECTS

In this section, the researcher presents the results of the questionnaire administered to target respondents. The researcher also reported the data collected from the two

sections of the questionnaire. The first is the criterion group returns (section A questionnaire) and the second is the primary data (section B questionnaire).

4.3.3 RESULT OF SECTION B OF QUESTIONNAIRE

This section presents 29 findings from the questionnaire which attempted to evaluate the conflict management strategies in the delivery of road projects. These results are presented in table 4.3, 4.4, 4.5, 4.6 and 4.7 respectively.

Table 4.3:

Delivery of Road Projects

Resp	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18
1	4	4	4	4	4	5	3	4	4	4	2	1	4
2	3	4	4	4	4	5	3	5	4	4	2	3	5
3	4	4	4	4	4	5	5	3	3	3	2	2	2
4	2	4	4	4	4	4	4	4	4	4	4	1	5
5	2	5	5	4	4	4	5	5	5	4	4	2	4
6	2	4	4	4	5	5	4	4	5	4	4	2	4
7	5	4	4	4	2	4	4	4	4	2	4	2	4
8	5	4	4	4	2	4	4	4	4	2	4	2	4
9	5	5	4	4	5	5	4	5	4	5	3	2	5
10	5	5	4	4	5	5	4	4	4	5	4	2	5
11	5	4	4	4	4	4	4	5	5	4	1	1	4
12	5	4	4	4	4	5	4	5	5	4	2	1	4
13	3	4	2	2	3	4	4	4	3	4	3	3	2
14	4	2	2	4	2	4	4	4	4	4	2	2	2
15	4	5	5	3	3	3	1	3	3	3	5	3	3
16	5	5	5	4	1	4	4	2	4	4	2	2	2
17	2	2	4	4	2	4	4	4	4	4	2	2	2
18	4	5	5	4	4	4	5	5	5	5	2	2	4
19	5	4	4	4	1	5	5	2	4	4	4	2	4
20	5	4	5	4	4	5	4	4	5	4	3	4	5
21	4	3	4	5	5	3	5	3	5	3	3	4	4
22	4	4	4	5	5	4	5	4	3	3	5	1	3
23	4	4	4	4	2	4	5	3	3	3	4	1	4
24	4	5	5	4	5	4	5	4	1	3	4	4	3
25	3	5	2	4	5	2	5	4	2	3	4	5	4
26	4	4	5	4	4	4	5	5	3	4	4	2	4
27	3	2	4	4	2	4	4	4	4	4	2	2	4
28	5	5	5	5	5	5	4	5	5	5	3	2	5
29	3	4	4	4	4	5	3	5	4	4	2	3	5
30	3	3	3	3	3	4	4	2	2	2	1	1	1

Table 4.3: Continued

Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Σ
4	3	5	4	4	4	2	4	4	2	4	87
4	4	5	4	4	5	3	2	4	4	4	93
5	4	4	5	5	5	3	4	4	5	4	93
4	5	4	5	5	5	4	2	4	5	4	95
4	4	4	5	5	5	4	3	4	5	4	100
4	3	4	5	5	4	3	3	4	4	4	94
4	2	5	2	4	5	2	2	2	2	2	79
4	2	5	2	4	5	2	2	2	2	2	79
4	2	3	4	4	4	2	5	3	2	4	93
4	2	3	4	4	4	2	5	3	2	4	93
4	1	2	4	4	4	1	5	1	1	5	81
4	1	2	4	4	4	1	5	1	1	4	82
4	2	3	3	4	4	3	4	2	3	3	76
4	4	4	2	4	4	4	2	4	4	4	80
1	1	5	5	3	1	3	1	3	3	1	70
4	4	4	2	5	4	2	4	4	4	4	85
4	4	4	2	4	4	4	2	4	4	4	80
3	5	5	4	5	4	4	3	4	4	1	97
4	4	4	4	2	4	4	4	4	4	2	88
4	3	4	1	3	3	2	5	5	5	5	96
5	2	2	3	4	5	2	3	5	1	3	86
3	4	5	5	5	1	4	4	3	5	2	91
4	4	4	4	4	4	2	4	4	4	4	87
4	5	5	4	3	3	4	4	4	4	3	94
4	3	2	4	3	2	4	4	5	5	5	89
4	5	5	4	3	3	4	5	4	4	5	98
4	4	4	2	4	4	3	4	4	4	4	84
5	4	5	5	5	5	3	5	5	3	5	109
4	4	5	4	4	5	3	2	4	4	4	93
4	3	3	4	4	4	2	3	3	4	3	69

 $\bar{Y} = 2641$

Table 4.4: Sources of Conflict

Resp	Q15	Q16	Σ
1	4	2	6
2	4	2	6
3	3	2	5
4	4	4	8
5	4	4	8
6	4	4	8
7	2	4	6
8	2	4	6
9	5	3	8
10	5	4	9
11	4	1	5
12	4	2	6
13	4	3	7
14	4	2	6
15	3	5	8
16	4	2	6
17	4	2	6
18	5	2	7
19	4	4	8
20	4	3	7
21	3	3	6
22	3	5	8
23	3	4	7
24	3	4	7
25	3	4	7
26	4	4	8
27	4	2	6
28	5	3	8
29	4	2	6
30	2	1	3

Total x1
= 202

Table 4.5: Alternative Dispute Resolution as a Remedy for Conflict

Resp	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Σ
1	3	5	4	4	4	2	4	4	2	32
2	4	5	4	4	5	3	2	4	4	35
3	4	4	5	5	5	3	4	4	5	39
4	5	4	5	5	5	4	2	4	5	39
5	4	4	5	5	5	4	3	4	5	39
6	3	4	5	5	4	3	3	4	4	35
7	2	5	2	4	5	2	2	2	2	26
8	2	5	2	4	5	2	2	2	2	26
9	2	3	4	4	4	2	5	3	2	29
10	2	3	4	4	4	2	5	3	2	29
11	1	2	4	4	4	1	5	1	1	23
12	1	2	4	4	4	1	5	1	1	23
13	2	3	3	4	4	3	4	2	3	28
14	4	4	2	4	4	4	2	4	4	28
15	1	5	5	3	1	3	1	3	3	25
16	4	4	2	5	4	2	4	4	4	33
17	4	4	2	4	4	4	2	4	4	32
18	5	5	4	5	4	4	3	4	5	39
19	4	4	4	2	4	4	4	4	4	34
20	3	4	1	3	3	2	5	5	5	31
21	2	2	3	4	5	2	3	5	1	27
22	4	5	5	5	1	4	4	3	5	36
23	4	4	4	4	4	2	4	4	4	34
24	5	5	4	3	3	4	4	4	4	36
25	3	2	4	3	2	4	4	5	5	32
26	5	5	4	3	3	4	5	4	4	37
27	4	4	2	4	4	3	4	4	4	33
28	4	5	5	5	5	3	5	5	3	40
29	4	5	4	4	5	3	2	4	4	35
30	3	3	4	4	4	2	3	3	4	30
									$x_2 =$	965

Table 4.5: Effectiveness of Conflict Resolution Models

Resp	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Σ
1	4	4	4	4	5	3	4	4	32
2	4	4	4	4	5	3	5	4	33
3	4	4	4	4	5	5	3	3	32
4	4	4	4	4	4	4	4	4	32
5	5	5	4	4	4	5	5	5	37
6	4	4	4	5	5	4	4	5	35
7	4	4	4	2	4	4	4	4	30
8	4	4	4	2	4	4	4	4	30
9	5	4	4	5	5	4	5	4	36
10	5	4	4	5	5	4	4	4	35
11	4	4	4	4	4	4	5	5	34
12	4	4	4	4	5	4	5	5	35
13	4	2	2	3	4	4	4	3	26
14	2	2	4	2	4	4	4	4	26
15	5	5	3	3	3	1	3	3	26
16	5	5	4	1	4	4	2	4	29
17	2	4	4	2	4	4	4	4	28
18	5	5	4	4	4	5	5	5	37
19	4	4	4	1	5	5	2	4	29
20	4	5	4	4	5	4	4	5	35
21	3	4	5	5	3	5	3	5	33
22	4	4	5	5	4	5	4	3	34
23	4	4	4	2	4	5	3	3	29
24	5	5	4	5	4	5	4	1	33
25	5	2	4	5	2	5	4	2	29
26	4	5	4	4	4	5	5	3	34
27	2	4	4	2	4	4	4	4	28
28	5	5	5	5	5	4	5	5	39
29	4	4	4	4	5	3	5	4	33
30	3	3	3	3	4	4	2	2	24
								$X_3 =$	953

Table 4.7: Calculation of Scores

Factors	Y	X ₁	X ₂	X ₃	Σ
1	87	6	32	32	157
2	93	6	35	33	167
3	93	5	39	32	169
4	95	8	39	32	174
5	100	8	39	37	184
6	94	8	35	35	172
7	79	6	26	30	141
8	79	6	26	30	141
9	93	8	29	36	166
10	93	9	29	35	166
11	81	5	23	34	143
12	82	6	23	35	146
13	76	7	28	26	137
14	80	6	28	26	140
15	70	8	25	26	129
16	85	6	33	29	153
17	80	6	32	28	146
18	97	7	39	37	180
19	88	8	34	29	159
20	96	7	31	35	169
21	86	6	27	33	152
22	91	8	36	34	169
23	87	7	34	29	157
24	94	7	36	33	170
25	89	7	32	29	157
26	98	8	37	34	177
27	84	6	33	28	151
28	109	8	40	39	196
29	93	6	35	33	167
30	69	3	30	24	126
Total	2641	202	965	953	4761

4.4 EVALUATION OF CONFLICT MANAGEMENT STRATEGIES IN THE DELIVERY OF ROAD PROJECT

The data contained in table 4.7 is used to carry out this analysis. A stepwise regression analysis using the SPSS software was performed on the above data and the results are as follows:

Table 4.8: Model Summary of independent variables

Model	Correlation Coefficient R	Coefficient Determination R Square	Adjusted R Square	Std. Error of the Estimate
1	.827 ^a	.684	.673	5.1159
2	.955 ^b	.911	.905	2.7646
3	.961 ^c	.924	.915	2.6034

- a. Predictors: (Constant), X₃
- b. Predictors: (Constant), X₃, X₂
- c. Predictors: (Constant), X₃, X₂, X₁
- d. Dependent variable: \bar{Y}

Table 4.9: Coefficients^a of independent variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	25.768	8.048		3.202	.003	9.283	42.253
	X ₃	1.960	.252	.827	7.790	.000	1.445	2.476
2	(Constant)	10.351	4.729		2.189	.037	.648	20.054
	X ₃	1.511	.146	.638	10.325	.000	1.211	1.811
	X ₂	.923	.111	.513	8.300	.000	.695	1.151
3	(Constant)	9.117	4.492		2.030	.053	-.116	18.350
	X ₃	1.394	.149	.588	9.378	.000	1.088	1.699
	X ₂	.885	.106	.491	8.378	.000	.666	1.103
	X ₁	.918	.435	.129	2.109	.045	.023	1.813

The regression result as shown above are the bases for the model (1, 2, 3) designed to predict the success of delivery of road projects (DORP) as determined by Sources

of Conflict (SOC), ADR remedy for conflicts (ADRFC) and Effective conflict resolution model (ECRM).

Y = Dependent variable (DORP)

X = Independent variable (CMS).

The derived model are:

MODEL 1:

$$Y_1 = 25.768 + 1.960 X_3 \dots \text{model equ. 1.}$$

The success in the delivery of road project from the results above depends on about 82.7% of the effective conflict resolution model (ECRM) variable x_3 . The variation in this ECRM further explains 68.4% of the success in the management of road projects used in the delivery of road development project in Imo State. When the above was adjusted for possible errors in estimation, the level of explanation in variance was reduced to 67.3%. The standard error in this estimate was however, 5.1159.

MODEL 2:

$$Y_2 = 10.351 + 1.511x_3 + 0.923x_2 \dots \dots \text{model equ. 2.}$$

Sequel to the stepwise methodology the variable x_2 enters model to meet with variable x_3 already there. This model for predicating the delivery of road project using the second variable of 95.5% with Effective conflict resolution model and ADR remedy for conflict. The entry of x_2 led to

91.1% increase in explanation of the delivery of road projects. When the above was adjusted for error, it increases to 90.5%. The standard error of the estimate was however reduced further to 2.7646.

MODEL 3:

$$Y_3 = 9.117 + 1.393x_3 + 0.885x_2 + 0.918x_1 \dots \text{model equ. 3}$$

Here variable x_1 enters model to meet with x_2 and x_3 . The third model implies that the delivery of road projects increase by 96.1% of correlation coefficient (R). The R-square increased to 92.4% and adjusted R square to 91.5%. The standard error of the estimate decreased to 2.6034. An F-test was performed on model 3 to test for significance of the model after the inclusion of all the independent variable. The result of F-value calculated using SPSS 10.0 for windows is as shown in table 4.10 below.

Table 4.10: ANOVA^d of dependent variable: Y

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1588.125	1	1588.125	60.678	.000 ^a
	Residual	732.841	28	26.173		
	Total	2320.967	29			
2	Regression	2114.603	2	1057.301	138.334	.000 ^b
	Residual	206.364	27	7.643		
	Total	2320.967	29			
3	Regression	2144.742	3	714.914	105.478	.000 ^c
	Residual	176.224	26	6.778		
	Total	2320.967	29			

- a. Predictors: (Constant), X_3
- b. Predictors: (Constant), X_3 , X_2
- c. Predictors: (Constant), X_3 , X_2 , X_1
- d. Dependent Variable: \bar{Y}

The sum of squares from the ANOVA table above is 2320.697 while the mean square is 714.914. Since the calculated F-test value is 105.478 and at 5% level of significance is F-tabulated (3, 26) is 2.98. We observed that $F(3, 26) = 2.98 < 105.478$ which signifies that the inclusion of conflict source, ADR remedy for conflict and Effectiveness of conflict resolution model in the model as independent variable is significant to predict the management of road project for proper delivery.

4.5 TESTING OF HYPOTHESIS

The t-test statistics was performed on the coefficient of x as stated in model 3 in order to estimate the extent to which each independent variable contributes to the management of road projects in the delivery of road projects. The output is shown in table. 4.11.

Table 4.11: Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
3 (Constant)	9.117	4.492		2.030	.053	-.116	18.350
X ₃	1.394	.149	.588	9.378	.000	1.088	1.699
X ₂	.885	.106	.491	8.378	.000	.666	1.103
X ₁	.918	.435	.129	2.109	.045	.023	1.813

(a) HYPOTHESIS ONE

HO₁: There are no sources of conflict in the management of road projects in Imo State.

HA₁: There are sources of conflict in the management of road projects in Imo State.

Since the calculated t-valued of 2.109 is greater than the tabulated t-value of 1.7056 from table, the researcher accept the Alternative hypothesis (HA) and reject the Null hypothesis (HO). It is therefore concluded that there are sources of conflict in the management of road projects in Imo State.

(b) HYPOTHESIS TWO

HO₂: Alternative Dispute Resolution is not an effective remedy for conflict in Imo State.

HA₂: Alternative Dispute Resolution is an effective remedy for conflict in Imo State.

Since the calculated t-valued of 8.328 is greater than the tabulated t-value of 1.7056 from table, we accept the Alternative Hypothesis (HA) and reject the Null Hypothesis (HO). It is therefore concluded that Alternative Dispute Resolution is an effective remedy for conflict in Imo State.

(c) HYPOTHESIS THREE

HO₃: Conflict resolution models are not effective for the management of road development projects in Imo State.

HA₃: Conflict resolution models are effective for the management of road development projects in Imo State.

Since the calculate t-value of 9.378 is greater than the tabulated t-value of 1.7056 from table, we accept the Alternative Hypothesis (HA) and reject Null Hypothesis (HO). It is therefore concluded that conflict resolution models are effective for the management of road development projects in Imo State.

(d) HYPOTHESIS FOUR

HO₄: Conflict management strategies does not significantly determine the successful management of road project in Imo State.

HA₄: Conflict management strategies significantly determine the successful management of road projects in Imo State.

Since the F-value calculated of 105.478 is greater than the tabulated F-value at 0.001 of (3,26) is 2.98 the researcher accept (HA) and reject (HO). It is therefore

concluded that conflict management strategies significantly determine the successful management of road projects in Imo State.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Based on the above findings the following conclusions can be made:

- i. Conflict in the management of Road projects is inherent and inevitable.

- ii. Conflict can metamorphose as a positive agent of change if properly handled.
- iii. Alternative Dispute Resolution (ADR) has become a compulsory tool for resolving conflict speedily and cheaply.
- iv. Conflict source, effective ADR and Effectiveness of conflict resolution model as independent variable is significant to predict the management of road projects for proper delivery.
- v. The proxies of independent variable are significantly related to one another and have significant effect on the Dependent variable which is management of road projects.
- vi. T-test of the hypothesis confirmed that sources of conflict, effective ADR and conflict resolution models are effective for the management of road development project in Imo State.
- vii. Litigants have equal opportunity regardless of resources to assert or defend their rights.
- viii. The legal system appears more understandable

- ix. Conflict is inherent and inevitable by-product of people having different wants, needs, interests and goals. Even the nicest, most reasonable people engage in conflict.
- x Road projects obtained a Correlation Coefficient (R) of 96.1% when delivered with management of road project.
- xi. Conflict source, effective ADR and Effectiveness of conflict resolution model, explained a percentage of coefficient of determination R square of 92.4% of the total variation in management of road projects to deliver a development project.
- xii. F-test of the hypothesis confirmed that the variable are significantly related to one another and have significant effect in the management of road project.

5.2 RECOMMENDATION

The following recommendations are made, based on the findings made and conclusions arrived at, as a way of enhancing the management of conflict on road project in Imo State.

- i. There is need to establish with the concept of the multidoor/Alternate court house already functional in

Lagos State and Abuja to other states especially in Imo State.

- ii. Some people see conflict as a taboo but it is inherent and inevitable by-product at people therefore should be embraced and managed properly.
- iii. Conflict should not be allowed to escalate before appropriate measures are taken to resolve it.
- iv. Project managers must be equipped with the relevant conflict resolution skills to enable them effectively handle conflict when they arise.
- v. Contractors and managers of road projects in Imo State should embrace Alternative Dispute Resolution as a compulsory tool for resolving conflict speedily and cheaply.

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APPENDIX I

CONTRACTORS WITH THEIR ADDRESS

S/N	CONTRACTORS	ADDRESS
1.	CODUC NIG. LTD.	1-3 CHUKWUONYE CLOSE, UMUNEKE VILLAGE, ANARA, ISIALA ABANO
2.	MACOL CONSTRUCTION COMPANY LTD.	NO. 177 TETLOW OWERRI OR KM 6 ABA-OWERRI ROAD, BEFORE ANAMBRA IMO RIVER BASIN OWERRI.
3.	ZEROCK CONSTRUCTION NIG. LTD.	61/63 MCC ROAD, ABA, ABIA STATE.
4.	MACRON ENGINEERING LTD.	KM 1 ONITSHA ROAD, P.O BOX 3683, OWERRI.
5.	SERVICE RESOURCES LTD.	TEACHERS HOUSE OWERRI IMO STATE.

6.	JORSIL LTD.	10 EDET EDEM STREET STATE HOUSING CALABAR
7.	DEKRYGER NIG. LTD	13 SABU AJOSE CRESCENT, SURULERE, LAGOS
8.	HAWANA CONSTRUCTION COMPANY LIMITED	SUNCITY HOTEL OVERRI
9.	FRANK AND GENE INTERNATIONAL LTD.	KM 2, OVERRI/ONITSHA EXPRESS WAY, OVERRI IMO STATE OR NO. 1 KOFO ABAYODU STREET/WHARF ROAD APAPA LAGOS
10	MACHT NIG. LTD.	
11	GRANDSTAR LTD.	NO. 26 PARK ROAD ABA, ABIA STATE.
12	ROADS AND BUILDINGS NIG. LTD.	KM 16 OVERRI PORTHARCOURT ROAD, OBINZE OVERRI WEST L.G.A. IMO STATE.
13	HARTON NIG. LTD	HARTON PREMISES, FEDERAL HOUSING ESTATE ROAD, EGBEADA ROAD-OWERI
14.	CHRIS BROWN NIG. LTD.	
15	LAND HILL NIG. LTD.	PLOT 54 IKENEGBU LAYOUT OVERRI
16	DOZZY SERVICES NIG. LTD.	334 ABA EXPRESS ROAD PORTHARCOURT
17	ENERCO NIG. LTD.	UMUNA OKIGWE, IMO STATE
18	AMICO NIG. LTD.	125 ABA OVERRI ROAD ABA, ABIA STATE
19	JCC NIG. LTD.	22 UDOM STREET, PORT HARCOURT
20	A.I.L LTD.	79/81 AWOLOWO ROAD IKEJA

Appendix 1 Continued

S/N	CONTRACTORS	ADDRESS
21	BOLIV LTD.	KM 17 PH ABA EXPRESS PH. RIVERS STATE
22	MONIER CONST. CO. LTD.	18 ABONNEMA WHARF ROAD PORTHARCOURT RIVER STATE
23	PATAN	KM 5 OVERRI-ORLU ROAD OLD ROAD, EGBEADA-UBOMIRI P.O BOX 3620 OVERRI IMO STATE, NIGERIA.
24.	TK ENGINEERING CO. LTD	NO. 9 VOLTAS STREET MAITAMA, ABUJA.
25	RAYCON CONST. NIG. LTD.	KM 3 ONITSHA EXPRESS ROAD INDUSTRIAL LAYOUT OVERRI
26	BENMOR NIG, LTD	136 AMAIGBO ROAD ORLU

27	BEVINA RESOURCES LTD.	NO. 7 RIDGEWAY SAFARI YARD, ENUGU.
28	SOLID FOUNDATION NIG. LTD.	61 OKIGWE ROAD UGWU ORJI OWERRI.
29	G.A. EZE CONST. CO. NIG. LTD.	20 HEAD BRIDGE ABAKPA NIKE ENUGU

Appendix II

Dept. of Project Management Technology
 School of Post Graduate Studies
 Federal University of Technology
 P.M.B. 1526
 Owerri.
 Date:

Dear Respondent,

I am a postgraduate student of the above mentioned institution and I am conducting a research for my MSc. Thesis on evaluation of conflict management strategies in the delivery of road project in Imo State.

Consequently, you are required to answer the questions on the questionnaire. The exercise is purely for academic purposes and the information obtained will be for the advancement of knowledge.

Your co-operation is highly solicited for the successful completion of this thesis.

Yours Faithfully,

Igbokwe Guy N.
08032623787

**EVALUATION OF CONFLICT MANAGEMENT STRATEGIES
IN THE DELIVERY OF ROAD PROJECT SURVEY
QUESTIONNAIRE.**

SECTION A

Please tick good (✓) in the boxes where applicable and fill in the spaces provided where necessary.

1. The name of my company is

2. My level in the organization could be described as:

Low Mgt cadre

Middle Mgt cadre

Top Mgt cadre

3. My academic qualification is.

FSLC ☐ O' Level ☐ OND/NCE ☐ HND/BSc ☐ Postgraduate ☐

4. I have worked in this organization for:

Less than one yr ☐ one yr to two yrs ☐ three yrs to four yrs ☐

Five yrs to six yrs ☐ Seven yrs and above ☐

5. I work in the department of:

Personnel dept ☐ Engineering dept ☐ operations ☐ Transport ☐

Accounts ☐ Others ☐

6. My Annual salary falls between:

N60,000 to N120,000 ☐ N121, 000 to N240,00 ☐ N241,000 to N360,000 ☐

N361,000 to N480,00 ☐ N481, 000 and above ☐

SECTION B

1. My organization have managed a road project in Imo State before.

Yes ☐ No ☐

2. The Road Projects my organization have managed can be described as: Smaller ☐ Small ☐ Medium ☐ bigger ☐ Biggest ☐

3. What is the numerical strength of the staff in our Company.

1-10 ☐ 11-20 ☐ 21-303 ☐ 1-40 ☐ 41 and above ☐

4. The numerical strength of the staff in:

(a) Management: below 10 ☐ above 11 ☐

(b) Technical: below 10 ☐ above 11 ☐

5. The nature of business in our company is contract oriented.
 Strongly Disagree Disagree Neither agree Nor Disagree Agree Strongly Agree
1 2 3 4 5
6. Our companys relationship with her client has never been problematic.
 Strongly Disagree Disagree Neither agree Nor Disagree Agree Strongly Agree
1 2 3 4 5

EFFECTS OF CONFLICT RESOLUTION MODELS

7. Conflict resolution approach attempts to analyze the human resource by looking at ones Emotion, reason and intuition.
 Strongly Disagree Disagree Neither agree Nor Disagree Agree Strongly Agree
1 2 3 4 5
8. ERI (Emotion, Reason and intuition) model are used to resolve conflicts between client, contractor, workers and communities.
 Strongly Disagree Disagree Neither agree Nor Disagree Agree Strongly Agree
1 2 3 4 5
9. Conflict resolution models used in the road sector are effective
 Strongly Disagree Disagree Neither agree Nor Disagree Agree Strongly Agree
1 2 3 4 5
10. Arbitration uses third party neutral to preside over a dispute and render an enforceable "Aware".
 Strongly Disagree Disagree Neither agree Nor Disagree Agree Strongly Agree
1 2 3 4 5
11. Client, contractor, workers and communities uses arbitration to settle their conflict.
 Strongly Disagree Disagree Neither agree Nor Disagree Agree Strongly Agree
1 2 3 4 5
12. Alternative dispute resolution is part of conflict resolution model used in road projects.
 Strongly Disagree Disagree Neither agree Nor Disagree Agree Strongly Agree
1 2 3 4 5
13. Alternative dispute resolution is a reliable option for solving problems between client, contractor, worker and communities.

Strongly <u>Disagree</u>	<u>Disagree</u>	Neither agree <u>Nor Disagree</u>	<u>Agree</u>	Strongly <u>Agree</u>
1	2	3	4	5

14. Negotiative is another type of conflict resolution model for resolving conflict.

Strongly <u>Disagree</u>	<u>Disagree</u>	Neither agree <u>Nor Disagree</u>	<u>Agree</u>	Strongly <u>Agree</u>
1	2	3	4	5

SOURCES OF CONFLICT

15. The conflict we encounter in our organization emanate from the workforce and distribution of resources.

Strongly <u>Disagree</u>	<u>Disagree</u>	Neither agree <u>Nor Disagree</u>	<u>Agree</u>	Strongly <u>Agree</u>
1	2	3	4	5

16. Ambiguous jurisdiction, goal incompatibility and conflict interest, communication barriers, dependence on once party by another group or individual, differentiation in organization, association of the parties and specialization, behaviour regulation, and unresolved prior conflicts are sources of conflict.

Strongly <u>Disagree</u>	<u>Disagree</u>	Neither agree <u>Nor Disagree</u>	<u>Agree</u>	Strongly <u>Agree</u>
1	2	3	4	5

PROPERLY MANAGED CONFLICT

17. Properly managed conflict determines successful road project.

Strongly <u>Disagree</u>	<u>Disagree</u>	Neither agree <u>Nor Disagree</u>	<u>Agree</u>	Strongly <u>Agree</u>
1	2	3	4	5

18. I need further training in the area of conflict and management.

Strongly <u>Disagree</u>	<u>Disagree</u>	Neither agree <u>Nor Disagree</u>	<u>Agree</u>	Strongly <u>Agree</u>
1	2	3	4	5

19. No company or organization is devoid of the existence of one type of conflict or the other in the mgt of road construction project.

Strongly <u>Disagree</u>	<u>Disagree</u>	Neither agree <u>Nor Disagree</u>	<u>Agree</u>	Strongly <u>Agree</u>
1	2	3	4	5

ALTERNATIVE DISPUTS RESOLUTION AS A REMEDY FOR CONFLICT

20. I do not believe that alternative dispute resolution is significantly effective as conflict resolution model in the road sector.
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |
21. ADR is fast becoming a standard source for many organizations.
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |
22. ADR is the amicable settlement of conflicts outside court processes.
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |
23. My company uses ADR often to solve our problems.
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |
24. ADR generally assist government, companies, firms, and other private & public organization to internalize and institutionalize ADR practice.
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |
25. ADR has become effective tool for addressing justice speedily and cheaply
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |
26. Modern commercial agreements now specially provide for ADR intervene on before resorting to court.
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |
27. I clearly understand the purpose and advantage of conflict resolution like ADR.
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |
28. Less time is spent with ADR than litigation.
- | | | | | |
|-----------------------------|-----------------|--------------------------------------|--------------|--------------------------|
| Strongly
<u>Disagree</u> | <u>Disagree</u> | Neither agree
<u>Nor Disagree</u> | <u>Agree</u> | Strongly
<u>Agree</u> |
| 1 | 2 | 3 | 4 | 5 |

1 2 3 4 5

WRONG CONFLICT MANAGEMENT

29. Conflict that are not properly resolved will surely resurface in the project management organization.

Strongly Neither agree Strongly
Disagree Disagree Nor Disagree Agree Agree
1 2 3 4 5

APPENDIX III

Regression: Evaluation of conflict management strategies in the delivery of Road projects.

Descriptive Statistics

	Mean	Std. Deviation	N
Y	88.0333	8.9461	30
X ₁	6.7333	1.2578	30
X ₂	32.1667	4.9694	30
X ₃	31.7667	3.7755	30

Correlations

	Y	X ₁	X ₂	X ₃	
Pearson Correlation	Y	1.000	.540	.748	.827
	X ₁	.540	1.000	.305	.444
	X ₂	.748	.305	1.000	.370
	X ₃	.827	.444	.370	1.000
Sig. (1-tailed)	Y		.001	.000	.000

	X ₁	.001		.050	.007
	X ₂	.000	.050		.022
	X ₃	.000	.007	0.22	
N	Y	30	30	30	30
	X ₁	30	30	30	30
	X ₂	30	30	30	30
	X ₃	30	30	30	30

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	X ₃		Stepwise (criteria: probability –of-F-to-enter <= .050, Probability –of-F-to-re move > = .100).
2	X ₂		Stepwise (criteria: probability –of-F-to-enter <= .050, Probability –of-F-to-re move > = .100).
3	X ₁		Stepwise (criteria: probability –of-F-to-enter <= .050, Probability –of-F-to-re move > = .100).

a. Dependent Variable: Y

MODEL SUMMARY

Model	Correlation Coefficient R	Coefficient Determination R Square	Adjusted R Square	Std. Error of the Estimate
1	.827 ^a	.684	.673	5.1159
2	.955 ^b	.911	.905	2.7646
3	.961 ^c	.924	.915	2.6034

MODEL SUMMARY^d

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F. Change	
1	.684	60.678	1	28	.000	

2	.227	68.883	1	27	.000	
3	.013	4.447	1	26	.045	1.961

- a. Predictors: (Constant), X_3
b. Predictors: (Constant), X_3 , X_2
c. Predictors: (Constant), X_3 , X_2 , X_1
d. Dependent Variable: Y

ANOVA^d

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1588.125	1	1588.125	60.678	.000 ^a
	Residual	732.841	28	26.173		
	Total	2320.967	29			
2	Regression	2114.603	2	1057.301	138.334	.000 ^b
	Residual	206.364	27	7.643		
	Total	2320.967	29			
3	Regression	2144.742	3	714.914	105.478	.000 ^c
	Residual	176.224	26	6.778		
	Total	2320.967	29			

- a. Predictors: (Constant), X_3
b. Predictors: (Constant), X_3 , X_2
c. Predictors: (Constant), X_3 , X_2 , X_1
d. Dependent Variable: Y

COEFFICIENTS^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	25.768	8.048		3.202	.003	9.283	42.253
	X_3	1.960	.252	.827	7.790	.000	1.445	2.476
2	(Constant)	10.351	4.729		2.189	.037	.648	20.054
	X_3	1.511	.146	.638	10.325	.000	1.211	1.811
	X_2	.923	.111	.513	8.300	.000	.695	1.151
3	(Constant)	9.117	4.492		2.030	.053	-.116	18.350
	X_3	1.394	.149	.588	9.378	.000	1.088	1.699
	X_2	.885	.106	.491	8.378	.000	.666	1.103
	X_1	.918	.435	.129	2.109	.045	.023	1.813

COEFFICIENTS^a

Model		Correlations			Collinearity Statistics	
		Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)					

	X ₃	.827	.827	.827	1.000	1.000
2	(Constant)					
	X ₃	.827	.893	.592	.863	1.158
	X ₂	.748	.848	.472	.863	1.158
3	(Constant)					
	X ₃	.827	.879	.507	.742	1.347
	X ₂	.748	.853	.450	.838	1.193
	X ₁	.540	.382	.114	.780	1.282

a. Dependent Variable: Y

EXCLUDED VARIABLES^c

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	X ₃	.215 ^a	1.901	.068	.344	.803	1.246	.803
	X ₂	.513 ^a	8.300	.000	.848	.863	1.158	.863
2	X ₁	.129 ^b	2.109	.045	.382	.780	1.282	.742

a. Predictors in the Model: (Constant), X₃

b. Predictors in the Model: (Constant), X₃, X₂

c. Dependent Variable: \bar{Y}

COEFFICIENT CORRELATIONS^a

		X ₃	X ₂	X ₁
1	Correlations X ₃	1.000		
	Covariances X ₃	6.332E-02		
2	Correlations X ₃	1.000	-.370	
	X ₂	-.370	1.000	
	Covariances X ₃	2.142E-02	-6.016E-03	
	X ₂	-6.016E-03	1.236E-02	
3	Correlations X ₃	1.000	-.274	-.374
	X ₂	-.274	1.000	-.170
	X ₁	-.374	-.170	1.000
	Covariances X ₃	2.209E-02	-4.333E-03	-2.421E-02
	X ₂	-4.333E-03	1.129E-02	-7.841E-03
	X ₁	-2.421E-02	-7.841E-03	.190

a. Dependent Variable: Y

COLLINEARITY DIAGNOSTICS^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	X ₃	X ₂	X ₁
1	1	1.993	1.000	.00	.00		
	2	6.758E-03	17.174	1.00	1.00		
2	1	2.980	1.000	.00	.00	.00	
	2	1.303E-02	15.125	.13	.16	1.00	
	3	6.755E-03	21.004	.86	.84	.00	
3	1	3.960	1.000	.00	.00	.00	.00
	2	2.050E-02	13.899	.04	.00	.21	.86
	3	1.256E-02	17.760	.22	.15	.79	.09
	4	6.544E-03	24.601	.74	.85	.00	.05

a. Dependent Variable: Y

RESIDUALS STATISTICS

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	71.8645	106.2084	88.0333	8.5998	30
Residual	-4.8178	4.7253	1.421E-15	2.4651	30
Std. Predicted Value	-1.880	2.113	.000	1.000	30
Std. Residual	-1.851	1.815	.000	.947	30

a. Dependent Variable: Y