STRATEGIES FOR MANAGING PROJECT CONSTRAINTS FOR SUCCESSFUL IMPLEMENTATION OF NIGER DELTA DEVELOPMENT COMMISSION RURAL DEVELOPMENT PROJECTS

BY

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CERTIFICATION PAGE

We hereby certify that this research project titled, Strategies for Managing Project Constraints in the Implementation of Niger Delta Development Commission (NDDC) Rural Development Projects in Abia State, is the original work of Onyema, Ofuruiche Val-Obiajulu (Reg. no. 20174081908) of the Department of Project Management Technology, in partial fulfillment of the requirements for the award of Masters (MSc) in Project Management Technology of the Federal University of Technology, Owerri.

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DEDICATION

I dedicate this work to my family, for being a source of inspiration to me.

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Onyema Ofuruiche Val-Obiajulu

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TABLE OF CONTENT

CHAPTER TWO: LITERATURE REVIEW

CHAPTER THREE: METHODOLOGY

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

The study explored the strategies for managing project constraints in the implementation of Niger Delta Development Commission (NDDC) Rural Development Projects (RDP) in Abia State. Coping with constraints in the implementation of NDDC projects in the rural communities of Abia State will proffer avenue for improved standards of living and enhanced quality of life for the rural dwellers. The field survey research design and judgmental sampling techniques were used. The primary data used for the study were obtained from target respondents who are the experts and professionals from NDDC; and other stakeholders among the rural dwellers. The instrument used for data collection and measurements were well structured questionnaire modeled in likert five point's scale. The methods of data analysis were relative severity index, (RSI) Earned Value Analysis (EVA) and Multiple Regression Analysis (MRA). The results of RSI uncovered that environmental and socio-economic constraints are the severest and most significant hindrance to implementation of NDDC RDP in Abia State. The EVA result discovered that almost all NDDC projects were not realized within their budgeted time and cost due to non-application of systematic strategies for management of project constraints. RDP suffered cost and time overruns at every stage of completion status. The results and findings from MRA and hypotheses testing infer that transparent collaboration, application of project management best practices, risk management and scope change management are the most decisive strategies that will enhance management of constraints in the implementation of NDDC RDP in Abia State. The study recommends seamless communication among stakeholders, transparency and collaboration, and economic empowerment of the rural populace, through the provision of formal education and skills acquisition at the grass root level.

Keywords: Rural Development, Implementation, Enhanced Quality, Judgmental, Hindrance

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Rural development is a global phenomenon that has attracted the attention of policy makers worldwide. Such attention has manifested in the high rate of industrialization, urbanization and education witnessed in most rural areas. Revitalizing the "rural areas" must include the participation of government, private sector and individuals who are expected to bear their expertise and select the projects that should impact positively on the standard of living, opportunities and improved social infrastructure.

It has been noted that the lack of basic amenities have been a major factor which has impeded the rapid development of the rural areas and this reflects in the low level of success often achieved in the implementation of rural development projects. The contention from various quarters attributed the low level success rate to the instability in government policies, the insincerity of government and even the governed, the inflation of contracts prices, kick-backs and the wrong way and manner in which contracts are awarded. (Echeme & Ubani, 2010).

Recent observation has shown that the poor delivery of development project in Less Developed Countries (LCDs) has contributed extensively to the problems of underdevelopment in these economies and is a big issue of general concern bedeviling these countries. Many scholars have associated the problem of poor project implementation to low level of management strategies with particular reference to low technical and managerial capacity to implement projects effectively.

Current discussions among developing nations appear to revolve around the attainment of the Sustainable Development Goals (SDGs) as it has been

discovered that competitive economic advantage of nations is strengthened by the level of development of their rural communities. Moreover, as under developed communities are often the sources and bedrock of unrest and insurgencies being experienced today owing to agitations from such areas for better living standards and economic empowerment.

In Nigeria, in a bid to achieve the needed development, the Federal Government established the Niger Delta Development Commission (NDDC) as an agency through which development projects are implemented in the Niger Delta region. Its main goal is to strengthen the rural communities through the provision of infrastructures to improve the social and economic well-being of the people with supervision by the Senate and House of Representatives committee. (Dasaodu 2013).

Despite the close supervision of the commission, there appears to be high-level of treachery and what looks like an unwholesome plot by some contractors and sadly some oil companies to undermine the efforts and achievements of the twenty-two (22) year-old commission. Many NDDC projects have been challenged by several factors without appropriate or adequate measures to mitigate and contain such limitations in the past and presently.

According to Otto and Ukpere (2014), The NDDC was established by Act of parliament and signed by the Obasanjo's administration in the year 2000. It took over the assets and liabilities of its precursor; the Oil Minerals Producing Areas Development Commission (OMPADEC) with a high volume of funding namely 13 percent. Its mandates were,

i. Formulation of policies and guidelines for development

ii. Conception, planning and implementation of projects and programmes for sustainable development of Niger Delta Areas including, roads, jetties, waterways, health, education, employment among others

iii. Surveying the Niger Delta Region in order to ascertain measures, which are necessary to promote its physical and socio-economic development?

iv. Implementation of all measures approved for the commission

v. Preparing master plans and schemes designed to promote physical development of the NDDC region

For instance, the environmental pollution and degradation from oil exploitation and drilling activities of oil firms in the Niger Delta region have continued unabated with limited or negligible environmental remediation being put in place. This situation has sometimes resulted in violent confrontation between the host communities and the firms in an attempt to effect change. Such disruptions are extremely costly to the Nigerian oil sector as both the multi-national companies and the Federal Government have vested interest in permitting uninterrupted extraction operations. In addition to the above, there are other myriads of constraints that need to be addressed in order to ensure successful implementation and delivery of NDDC projects in the Niger Delta Region of Nigeria (NDRN).

When the socio-political climate of a country is peaceful, then will it be able to attract investors. Owing to the fact that crude oil which is found in the Niger Delta region of the county is the main stay of the Nigerian economy, it is imperative that the region which lays the golden egg is enabled to develop, is secure and peaceful. The positive impact of this will of course cascades to other parts of the nation in the long run and in turn boost national output, export, foreign exchange generation and sustainable development of the nation as a whole.

1.2 Problem Statement

The study addresses problems constraints militating against the successful implementation of development projects especially in the rural areas. The welfare and quality of life of rural dwellers are greatly hinged on how effectively and efficiently the objectives of rural development are achieved. Chief among these objectives are; improved quality of live, enhanced economic activities, improved productivity, improved accessibility/mobility, quality health care and education. These objectives which were well enumerated in the NDDC act of parliament of the year 2000 are sadly, still to be realized, as expected.

Over the years, the level of success achieved in the implementation and delivery or Rural Development Projects (RDP) in communities in Nigeria have been quite low despite the huge resources committed to these projects. Agreed, some constraining factors could be attributed to factors inherent in the Niger Delta Region of Nigeria (NDRN), such as the high level of insecurity, hostility and vandalism among others. However, the required prerequisite level of competence, capacity and experience should be considered as critical factors for the award and execution of rural development projects. The lack or poor application of project management principles in the execution of project usually portends a recipe for project failures and poor project delivery with the resultant cost and time overruns.

For instance, a field survey indicates that before implementing Rural Development Projects, principles of project management, indigenous development and participatory rural development are important for successful project delivery (Muronya & Iminza, 2020).

To buttress the magnitude of the problem, available statistics show that more than 4,000 development projects initiated by NDDC are yet to be completed due

to number of constraints which include, but not limited to the following: - environmental problems, misunderstanding and conflicts with the rural dwellers, hence projects are hardly implemented or delivered without cost and time overruns (Usorah, 2013).

Due to these hypothetical factors, rural development projects are constrained and project outputs are usually significantly characterized by scope creep, low quality, shoddy project delivery, cost and time overruns; more so, when the appropriate strategies for the management of each peculiar constraint are not applied.

Currently, there is a lack of or poor efficiency in the existing management system adopted by NDDC in managing their projects: The fact that NDDC is a public sector institute of the government could also be a contributing factor to the lackadaisical approach by NDDC to explore avenues, develop strategies and tactics to achieve the objectives of NDDC in the NDRN. The failure in doing the above has resulted in many projects suffering poor results, low returns on investments and shoddy deliveries that are short of user requirements.

1.3 Objectives of the Study

The main objective of the study is to identify, analyse and evaluate the strategies for managing project constraints in the Implementation of NDDC RDP so as to enhance the impacts of these projects on the quality of life of the people and facilitate sustainable development for rural dwellers in Abia State Nigeria. The specific objectives include to:

i. Identify and prioritize the severity of salient project constraints in the implementation of NDDC RDP in Abia State so as to provide avenue for action response plan for mitigating their adverse effects.

ii. Assess the level of relationship between transparent collaboration among the stakeholders and successful implementation of NDDC RDP.

iii. Evaluate the extent to which application of Project Management Best Practices (PMBP) with detailed work breakdown structure will influence smooth implementation of NDDC RDP.

iv. Ascertain the extent quality management with feedback responsiveness throughout the project life cycle influences the implementation of NDDC projects.

v. Determine the degree risks to which management strategy will facilitates successful implementation and delivery of NDDC projects.

vi. Ascertain the level of relationship between scope change management and smooth implementation of NDDC projects in Abia State.

1.4 Research Questions

The following are the research questions for analyses

i. What are the salient constraints and their respective prioritized severity indexes in the implementation of NDDC projects in Abia State?

ii. To what extent do the overall identified strategies affect successful implementation of NDDC projects?

iii. To what extent do transparency and collaboration of stakeholders influence successful implementation of NDDC projects?

iv. To what extent do quality management and control influence successful implementation of NDDC projects in Abia State?

v. To what extent do risk management affect successful implementation of NDDC projects in Abia State?

vi. To what extent does the application of PMBP influence successful implementation of NDDC projects?

vii. To what extent does scope change management strategy influence successful implementation of NDDC projects?

1.5 Research Hypothesis

The following were formulated to assist in achieving the stated objectives;

H01: The overall identified strategies for managing project constraints do not have significant effect on successful implementation of NDDC RDP.

H02: The level of transparent collaboration of stakeholders within NDDC contracts does not have significant effect on successful implementation of RDP.

H03: The extent of quality management and control within the NDDC contracts do not have significant effect successful implementation of NDDC RDP?

H04: The existing risk management level is not significant for successful implementation of NDDC projects.

H05: The extent of adopting of project management best practices in NDDC contracts does not have significant influence on implementation of NDDC RDP in Abia State.

H06: The level of scope management in the NDDC contracts does not have significant effect on successful implementation of RDP.

1.6 Justification for the Study

Considering the facts that the successful implementation of projects in rural communities contribute to economic growth and Abia State is in serious need of development to be able to attain sustainable development. This study will be of immense benefit to the government of Nigeria because the needed national development will be achieved, if the solutions in this study are implemented.

Niger Delta Development Commission (NDDC) will better understand the problems affecting their project implementation efforts and be repositioned to tackle them for successful realization of their objectives.

Lastly, the rural people will benefit as a more functional and performing NDDC will be on ground to assist them improve their standard of living through infrastructural provision. They will also understand the need to support the Niger Delta Development Commission to ensure development to their community.

1.7 Scope of the Study

This study is set to analyze and manage constraints in some selected NDDC project performance between the period of 2010 to 2020 with respect to time, cost, quality criteria, scope, risks, resources, regulations, organizational structure etc. since they are the main criteria for judging project performance. Also, efforts were made to identify and evaluate the major factors constraining improved success in the implementation of Niger Delta Development Commission (NDDC) projects in the rural areas of Abia State, Nigeria. There are many NDDC rural development project scattered all over Nigeria. This study is limited to NDDC rural development projects in Abia State. The study was as well limited to randomly select completed and on-going NDDC rural development projects in Abia State. Another limiting factor was the difficulty in combining office hours and the schedules to meet with most respondents. The time scope of 6 months was scheduled to complete the research thesis. The nonchalant attitude of most respondents to give out information on NDDC activities due to political reasons and the likes was a serious limitation. Notwithstanding, the researcher adopted high level of interpersonal relationship to achieve the set objectives of the study. The theoretical scope includes theory of constraints and management theory.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Concept of Project Implementation

Project Implementation is the process of putting a project plan into action to produce the deliverables, otherwise known as the products or services, for clients or stakeholders.

According to Indeed Editorial Team (2022), to implement a project effectively, project managers must consistently communicate with a team to set and adjust priorities as needed while maintaining transparency about the projects status with the clients or any key stakeholders. Project Implementation that relies on strategic planning can help a team to achieve the project objectives while staying with budget and relevant deadlines. Implementation is the part of the project cycle that bridges the planning process and the project outcomes. The steps of the process, and how well it is executed, can ultimately determine the success of a project. Some of the steps involved in project implementation include; assess the project plan, execute the plan, make changes as needed, analyze project data, gather feedback, provide final reports etc.

2.1.2 Concept of Rural Development

Rural development is defined as the practice of improving communities' economic values and as a process to bring about more business and investment into the community. RDP processes facilitate rural modernization and monetization to transform from isolation and integrate with the national economy (Usoroh, 2013). It is also a process of improving the standard of living of the masses of the low income per capita residing in the rural areas and the standard living of the population is being measured by;

i. Generating employment empowerment
ii. Encouragement for information and educational services
iii. Equitability with the urban area
iv. Housing and recreation
v. Enforcement, maintenance of law and order.

Rural development is the developing of the rural people to enable them to most effectively and efficiently utilize their interlay technology and other resources for further development of both themselves and their resources.

However, Desmond (2016) posited that rural development can also be referred to as any project or program that works to improve the community, to be self-sufficient in generating and controlling the resources necessary to meet its social, economic goals and the needs of the communities.

- The responsibility for achieving self-sufficient resides with native governing bodies and local leadership.
- Progress towards self-sufficiency is based on effort to plan and direct resources in a comprehensive manner consistent with long-range goa ls.

Usoroh (2013) and Desmond (2016) highlighted the following objectives for rural development;

- To have economic development through their resources
- To have equitable distribution of income.
- Generating of employment and entrepreneurship.
- Improvement of the healthy standard of living by helping them in the right use of their resources e.g. in nutrition.
- To promote better social, natural recreational and spiritual life among the people.
- To help rural families in better appreciation of SWOT in the village. To open new opportunities for developing talents, leadership of rural people and to build rural citizens who are proud of their occupation, independent

in thinking, constructive in outlook, capable, efficient and self-reliant in character, and having love of home and country in their heart.

2.1.3 General Issues in Rural Development

Authors and researchers such as Samuel (2013), Han (2007), Baccarini (2009), Echeme (2011) etc identified the following as general issues in rural development: growing divergence between low and high potential areas, technological targeting, rethinking institutional capacity and governance etc as discussed below.

i. **Growing Divergence between Low and High Potential Areas - The less** favoured areas (low potential) have very different needs than the (high potential) high favoured areas where modernization is already underway. (Samuel, 2013) noted that that they need agriculture-based development to at least gain from globalization opportunities and generate lower returns because of their inherent disadvantages.

ii. **Technological Targeting** - Their production will increase based on the seed fertilizer model of the Green Revolution. However, Hans (2007) commented that policies to target technologies need to be located as public intervention is particularly required in developing technologies and information channels appropriate to poor farmers.

iii. **Re-thinking Institutional Capacity and Governance-** Decentralization should be promoted to re-enforce positive trends to increase the social status and account for effective solutions in the rural areas.

iv. **Diversified Livelihoods-** Many households pursue multi-functional and multi-spatial livelihoods; support is needed to the rural-urban migration to stake up agricultural for a better re-adjustment (Samuel, 2013).

v. **Rural risks and vulnerability** - The rural face new risks due to increase in natural disasters and rapid economic changes. External support for risk-mitigation and coping strategies is generally insufficient as public

and private roles are needed to support insurance and risk-coping to be strengthened which depends on the fiscal burden being addressed.

vi. **Preventing and Managing Conflict** - Conflict has a debilitating impact on rural livelihoods and increasing levels of conflict threaten the achievement of poverty reduction targets.

vii. **Issue of Agricultural** - Baccarini (2009) posited that the major issue in most rural areas is how to industrialize agriculture, which includes increasing the marketization level of agricultural production and operation, and stabilizing the prices of agricultural product, changing the situation and achieving the economies of scale of agricultural production and operation and guaranteeing the food security in the rural populace.

viii. **Issue of Rural Areas** - It is particularly reflected in the disparity of economic and cultural development between urban and rural areas that are caused by the dual segmentation based on the household registration system (Hans, 2007).

ix. **Issue of Farmers** - According to Echeme, (2011) it includes improving the income level of farmers, alleviating burdens of farmers, increasing the cultural qualities of farmers, and safeguarding the rights of farmers.

x. **Environmental and Socio-Economic Factors Constraining NDDC Project Implementation** - Rural development project implementation is an important issue in any discuss relating to national development and achievement of the millennium development goals. NDDC is one of the ways the Federal Government of Nigeria is thriving to achieve its goals of development. Unfortunately some factors appear to be impending in this move to develop the rural areas for an all-round development of the country. Some of the identified critical factors as stated by (Samuel, 2013) and from field interviews include; the ethnic hostility coupled with youth restiveness and vandalization of project facilities, high level of

poverty, low literacy level, low level of community orientation and support, and climatic conditions.

xi. **Ethic hostility, youth antagonism and vandalization of project facilities** - Samuel, (2013) lamented on the negative effect of the hostilities and youth restiveness in the Niger Delta areas of the country and its effect on the level of development in these areas. There is no doubt that the rate of development has been hindered most times by the activities of the communities and the youths of these areas under the Niger Delta regions. Federal government efforts to develop the rural areas of this region in the past have been thwarted by the nefarious activities of the host communities until the Amnesty programme of the FGN in 2008 by the late YarAdua administration. Still the level of vandalization of project equipment is becoming more worrisome, especially now that the transformation of the nation is ongoing.

xii. **High level of poverty** - This poverty has been endemic to the rural people of Niger Delta that all they want is how much of the contract fund that goes into their private pockets as royalty, matching ground fee, development fee, etc. This has to a large extent negatively affected the efforts of the government towards the development of the rural areas of the region. Echeme, (2011) posited that poverty has been a major critical factor inherent in most rural development project implementation in most developing countries. Also, Hans (2007) contributed when he complained of level of poverty in Bangladesh and its level of effect in the effort to develop the rural areas of the country. So poverty is critical to the successful implementation of development projects in the rural areas and NDDC projects are not exempted.

xiii. **Low level of Literacy** - Education and information is the wheel that moves development but when these are lacking, it becomes difficult to develop an area. This is the case with most Niger Delta rural areas in Nigeria. Unfortunately, most people in the Niger Delta areas do not have any regard for qualitative education which is the key to development and this has been making it difficult for NDDC to operate smoothly in the implementation of development projects in these areas. This conforms to the saying that "it is difficult to convince an illiterate than the literate".

xiv. **Climatic Condition -** According to Samuel (2013) climatic condition of Abia state really constrained NDDC development projects in the rural areas of Abia state. There was even a case he presented that occurred in Obani community concerning Obani primary school reconstruction project. According to him, heavy rainfall blew off the roof of one of the building and this has no doubt constrained the effort of NDDC in achieving total success in the school project. The road construction projects undertaken by NDDC were not left out in this poor climatic conditions witnessed during those periods.

xv. **Low level of Community orientation and support -** Proper or adequate sensitization of the people has been identified as being critical to the successful implementation of development projects especially in the rural areas where the level of education is low with high prevailing poverty. It is a known fact that development psyche of most these people are low, hence the need for adequate orientation and support in order to create an enabling environment for successful project implementation (Akpan, Echeme, &Ubani, 2017). But most times, the level of development orientation is low and does not guarantee the total community support and commitment to the issues of development projects especially, the NDDC development projects. Despite all contributions made by various

authors and development observers and stakeholders, the level of rural development projects in Abia State and other southeastern states still remain low. This study has reviewed many literatures in this grey area of rural development through the implementation of development projects, but not much has been said or written regarding the realities of what happened during the implementation of these rural projects, especially NDDC development projects. Hence, this study identified the critical factors inherent in the rural areas of Niger Delta regions that negatively affected the smooth implementation of NDDC development projects in the rural areas.

The levels of destruction in the rural areas reinforces the need of public efforts towards rural development. Otto and Ukpere (2014) assert that rural and community development are generally concerned about improvements in the quality of life but community development may not be restricted to rural areas alone. Rural development is a means of bringing about enduring changes in the structure of rural sector in a manner that enhance standard of living.

Rural development encompasses radical improvement in social-relationship governing land tenure, technology, labour, physical infrastructure, access to services and political organization of society. The objectives of rural development revolve around the productivity, welfare and quality of life of the rural dwellers.

PMI describes project constraints as the general restrictions that limit the project or portfolio in a particular domain. For example, a cost restriction in your project means that you are limited by the budget or resources you have to implement it. Project constraints are usually interconnected so if you change one constraint, it will have an impact on the other.

Both dependencies and constraints are important elements of any project. Projects essentially are a series of interrelated tasks that will have a priority order and relationship with each other, which will cause dependencies.

On the other hand, constraints happen when you have a set of requirements from a project, a deadline for completion, and other characteristics that put a limit on how to approach the project, it might be limited by the technology available or have a lack of dedicated resources.

2.1.4 Concept of Management Strategy

Enabling management strategies are necessary for managing project constraints. According to indeed Editorial Team (2022) management strategies make it possible for organisations to achieve top performance. An excellent management strategy paves the way for success by determining organization's objectives and goals, putting in place timeline for achieving both the long and short term goals, establishing the resources for achieving the set goals, and providing the company and those in its employment with a clear sense of direction. Management strategies were further defined as techniques used in business control and direction to achieve the set goals. According to Indeed Editorial Team (2022), examples include strategies for leadership, goal setting, operational activities and business administration.

The Niger Delta Development Commission was established in 2000 by President Olusegun Obasanjo with the mission of facilitating the rapid, even and sustainable development of the Niger Delta into a region that is economically prosperous, socially stable, ecologically regenerative and politically peaceful. It is a development agency set up by the Federal Government of Nigeria (FGN) to stimulate sustainable development in the Niger Delta areas of the nine states that comprises of Abia, Imo, Akwa Ibom, Cross River, Ondo, Edo, Delta, Rivers and Bayelsa states.

Indeed the Niger Delta before the establishment of Niger Delta Development Commission was threatened by severe crisis of unimaginable proportion fueled by ethnic hostilities, youth restiveness, vandalization of facilities and destruction of properties (Usoroh, 2013). This was so pervasive that many stakeholders including oil firms recorded unquantifiable loses. The Niger Delta Development Commission was thus created to address these long fundamental problems, stimulate sustainable development and calm the turbulent waters of the area. It has the mandate to formulate policies and guidelines for the development of the Niger Delta area and its scope is as encapsulated.

2.1.5 Triple Constraints of Projects and Sub constraints

Complex construction projects are subjects to numerous constraints that limit the commencement or progression of field operations. According to Ted, Rehul and Ligggunng (2011) effective management of these constraints is a key element in the look-ahead planning process to ensure a constraints free work plan, and thus efficient field operations. To effectively manage constraints in the field, their paper discussed a process model for semi-automated and computerized constraints tracking and status reporting. To manage project constraints, it is imperative to understand them and know to deal with them. Because every project and its resources are finites, project managers must work with (and around) their limits. One of the biggest projects manager's responsibilities is managing projects constraints in order to ensure that project gets completed on time, on budget and with the appropriate allocated resources. E-book (2021) identifies the following 6 project constraints as follows; Quality, time, cost, scope, benefits and risks. According to Wrike (2021) with any project, there are limitations and risks that need to be addressed to ensure the projects ultimate success. The three primary constraints that project managers should be familiar with are time, scope and cost. These are frequently known as the triple constraints or the project management triangle. Each constraint is

connected to the other two; so, for example, increasing the scope of the project will likely require more time and money, while speeding up the timeline for the project may cut costs, but also diminish the scope. On the other hand, constraints happen when you have a set of requirements from a project, a deadline for completion, and other characteristics that put a limit on how to approach the project, it might be limited by the technology available or have a lack of dedicated resources.

Simply, anything that stops or puts a limit on implementation strategies is considered a project constraint. The most common project constraints that project managers always deal with irrespective of their industry are;

- Project scope
- Time and
- Cost.

Prior to that, Kissftow (2021) identified three major project constraints as noted in the iron triangle Project constraint in project management are generally divided into two major categories according to their frequency, qualitative or quantitative natures, and how well-known they are.

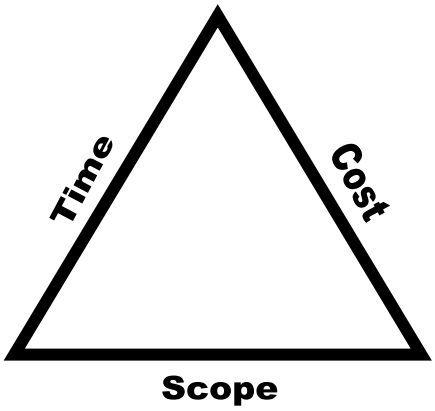


Figure 2.1: The iron or triple constraints triangle: Source Kissflow (2022)

The iron triangle, sometimes referred to as the triple constraints and project management triangle, is a set of three interdependent project constraints that

every manager faces. The three basic constraints as posited by Kissflow (2021) and Wrike (2021) known are the following:

1. **Scope Constraints:** Project scopes are extremely precise and come with all the necessary information about the final project deliverable. The feature and functions identified in the scope have to be achieved in order to call any particular project a success.

2. **Time Constraints:** there are several tasks in a project that have a certain processing time and there is nothing to do in order reduce it. Effective time management requires that time stipulated for each task is accommodated while ensuring that all the required objectives are met within the given deadline.

3. **Budget Constraints:** The project budget indicates the maximum amount that is allowed to spend on a particular project. It does not mean the associated cost of the required materials or processes only. The budget include vendor payments, labor costs, and even contingency funds that are only required when you are in damage control mode if things don't go as planned.

A project manager needs to balance all these constraints to deliver the best results while staying within the project constraints.

A number of project management books and other resources show that having mastery over the triple constraints will be enough to achieve project success. However, various other project constraints will need attention to implement effective project management strategies. (Kissflow, 2021).

The following are the three most important project constraints beyond the management triangle:

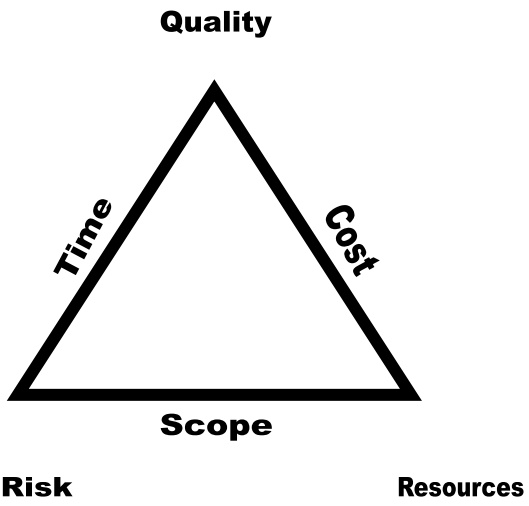


Figure 2.1: The iron triple showing the six most important Project constraints (Kissflow 2021).

Quality:

There is a modern school of project management that adds quality as one of the constraints, though it doesn't belong in the original triple constraints. But, it's an important factor that limits the project and impacts its measure of success.

Resources:

Resources propel the actual reason behind the project or the particular need for the project in a specific business environment. This is necessary asset whose main role is to help carry out a certain task or project. Projects require many different types of resources to be completed. Resources should be assessed are allocated before project begins. This constraint is addressed in the business case and the project managers must ensure that their scope statement covers the primary objective of the project. If for any reason, the benefit changes due to external factors, the project is immediately halted so the business case is reevaluated. Resource management is of critical essence as it helps to achieve the greatest organizational value.

Risks:

One can never truly eliminate risks from one's project. Sometimes you do everything right and plan for every possibility but still, your project may hit a road block. Resources management is of critical essence – as it to achieve the greatest organizational value.

2.1.6 Regulations and Organizational Structure:

This is one of the significant constraint project managers must deal with is the organizational structures or the regulations of their company or the country.

Let us take the Covid-19 pandemic situation as an example of the project constraint. If a team was working on a project which targeted international tourists, their project would be in shambles. Without their business case, the entire project would have stopped in the pandemic. The team or manager did not make any mistake, yet they found themselves in an adverse situation.

In addition to the constraints discussed here, multiple other constraints limit the performance of a team. It is a project manager's, responsibility to identify the possible constraints that might encounter and then come up with strategies to manage them. There are also constraints due to: environment, policy, socio-economic, technical/technological, capacity etc in construction project implementation.

2.1.7 Ways of Dealing with Project Constraints

It is important to understand that project constraints can never be eliminated and each project will have a different set of constraints. The only way to properly manage project constraints is by transparency, implementation of project management best practices, effective task management software, and maintaining control over the project. (Kisslow, 2021).

- Transparency is often considered a key factor for successfully management of project constraints. With transparency, everyone involved in the process knows about the priorities and objectives of the project.

- In addition to helping in managing project constraints, project transparency can help project managers by enhancing the productivity of their team.

- Implementing project management best practice and dynamic management strategies in projects is another way of dealing with constraints and completing the project successfully.

- Creating a detailed work breakdown structure, measuring performance throughout the project life cycle, keeping the team members engaged, and having an effective control strategy are some of the ways that can improve performance despite multiple constraints. The contributions of other authors and researchers on the ways and strategies for managing project constraints are presented in the summary below.

Numerous authors have their concepts of projects and project management. However, the following views have made the concept clearer and can be used to describe the topic under study. Struckenbruck (2009) conceive a project to be a one - short, time limited goal directed major undertaking requiring the commitment of varied skills and resources. According to Newman, Warren and McGul (2007), a project is a separate and clear cut cluster of activities that has a distinct mission and defined termination point. A project consist of a combination of organizational resources pulled together to create something that did not previously exist and that will provide a performance capability in the design and execution of organizational strategies (Cleland 1990).

A project has a single set of objectives and when these objectives are realized, the project is completed. Therefore, a project has a finite and well-defined life span. Contributing to the development of the discipline of project management, Frankel (2010) adds that a project is a planned development requiring the

performance of organized tasks and use of various resources in their accomplishment. It means that a project is a series of jobs that individually have to be completed in order for the system(project) to be satisfactorily consummated; project management therefore involves the planning, scheduling and controlling this project so that the required resources are optimally employed throughout a sequence of successfully completed task (Akpan and Chizea, 2012).

Projects are also organized activities which result in change. They are unique because they have a time frame, a beginning and an end. Successful projects must result in positive change such as an improvement in the wellbeing of the household, the community, the nation and the world. Okongwu (2004), points out that project are crucial to the growth and development of the national economy. Projects (public or private) can be conceived as the building blocks of the national economy.

To fortify the structure of the nation, it becomes imperative to plan and implement additional projects, drawing from the nation's human and non-human resources. These projects, when successfully completed, add to the wealth of the nation and become an index of the level of economic development.

However, we have private and public projects but for the purpose this study, emphasis is more on public projects. Public projects are industrial infrastructural, public utilities and service undertakings initiated and executed by the public sector for the benefit of the society. NDDC projects are public projects initiated to assist the development of the oil rich States of Niger Delta. Various levels of government, their agencies (NDDC Projects inclusive), and international organizations fund and execute public projects. Ajaokuta steel complex, Kainji Dam, Seaports, Road networks, Market and School buildings/rehabilitation, etc. are examples of public projects. The government plays a very dominant role in the economy and there are more public projects in

developing economies. Echeme, (2015) have it that the bloated size and inefficiency of the public sector no doubt contributed substantially to the economic crisis currently bedeviling the nation. Lamenting the inefficiencies of the public sector Salau (2013) complains that public projects suffer from procrastinations, poor conceptualization, planning and implementation. They are notorious for escalating cost and backlog of debts. The scathing commentary, aptly describes the track records of most key public projects, parastatals and companies in the country. Essien (2007), also observes that succeeding government at the local, state and federal levels are not in the habit of completing projects initiated and commenced by their predecessors. They always prefer to award fresh contracts. What are the reasons? Further research may provide some answers.

In view of the uniqueness of project planning and implementation, specialized management approaches, techniques and controls are required. Project success is completely dependent on adequate planning, directing, scheduling, monitoring and control. These project functions must be closely bound together by an adequate information and control system. For efficient project operation, a single information and control system should be used (Charette and Hallversion, 2012). However, projects have special requirement which must be met by the information and control system. These requirements make use of such tools as PERT/CPM, PERT/CPST. Precedence Diagraming Method (PDM), Work Breakdown Structure (WBS), Resource Allocation, and Cost/Schedule Integration. Many of these tools dated back to the 1950s, and their extensive automation was developed during the 1960s. Their modern implementation depends upon the wide devices. There are many computing power and display packages that can be used to implement either all or part of an information control system very efficiently and at reasonable cost (Newman, Warren and McGul (2007).

Project control tools should be selected and implemented as early in the project life cycle as possible. Such decisions depends on what extent, details and how often should program cost and schedule status to be provided to project, functional and top management.

2.1.8 Historical Information and Mandate of Niger Delta Development Commission (NDDC) that Predisposes Management Strategies for Implementation of RDP.

The Niger Delta Development Commission was established in 2000 by President Olusegun Obasanjo with the mission of facilitating the rapid, even and sustainable development of the Niger Delta into a region that is economically prosperous, socially stable, ecologically regenerative and politically peaceful. It is a development agency set up by the Federal Government of Nigeria (FGN) to stimulate sustainable development in the Niger Delta areas of the nine states that comprises of Abia, Imo, Akwa Ibom, Cross River, Ondo, Edo, Delta, Rivers and Bayelsa States.

Indeed the Niger Delta before the establishment of Niger Delta Development Commission was threatened by severe crises of unimaginable proportion fueled by ethnic hostilities, youth restiveness, vandalization of facilities and destruction of properties (Usoroh, 2013). This was so pervasive that many stakeholders including oil firms recorded unquantifiable loses. The Niger Delta Development Commission was thus created to address these long fundamental problems, stimulate sustainable development and calm the turbulent waters of the area. It has the mandate to formulate policies and guidelines for the development of the Niger Delta area and is scope is as encapsulated.

- To conceive, plan and implement in accordance with set rules and regulations, projects and programs for sustainable development in the field of transportation, health, employment, industrialization, agriculture

and fisheries, housing and urban development, water supply, electricity and telecommunications.

- To survey the Niger Delta in order to ascertain measures necessary to promote its physical and socio-economic development.
- Prepare master plans and schemes designed to promote the physical development of the Niger Delta region and the estimation of the member states of the commission.
- Implement all the measures approved for the development of the Niger Delta region by the federal government and the states of the commission.
- Identify factors that inhibit development of the Niger Delta region and assist the member states in the formulation and implementation of policies to ensure sound and efficient management of the resources of the Niger Delta region.
- Assess and report any project being funded or carried out in the region by oil and gas companies and any other company including non-governmental organization as well as ensuring that funds released for such projects are properly utilized.
- Tackling ecological and environmental problems that arise from the exploration of oil mineral in the Niger Delta region and advising the federal government and the member states on the prevention and control of oil spillages, gas flaring and environmental pollution.
- Liaising with the various oil mineral and gas prospecting and producing companies on all matters of pollution, prevention and control.

Since the creation of NDDC over 22 years ago, the questions of many concerned is, to what extent has NDDC actualized these set goals? Comparative analysis has shown the following;

- In the health sector, the commission appears to have done well as the collaboration with pro-health, voluntary group and medical doctors to provide free medical services to people in all parts of the densely populated region and the rural areas improved health delivery in these areas.
- The impact of the commission has also been felt by the youths in the skills acquisition and training program aimed at empowering youths in the realization of the need to engage them efficiently and effectively in the society.
- It aims at providing modern information technology skills for gainful employment or active participation in the economy.
- The peaceful socio-political climate is expected to attract tremendous foreign investors who desire to do business not only NDDC region but also in other parts of Nigeria.

Some cities however have faulted the commission for allegedly focusing on short-term projects like building and furnishing classrooms blocks. Available statistics have also shown that more than 4,000 projects initiated by NDDC are yet to be completed (Usoroh, 2013).

Regarding agriculture, the Niger Delta has a geographical area measuring about 70,000sq km in the southern part of the country and the Niger Delta states are equally blessed with fertile land, water and raw materials capable of boosting large-scale farming, fishing and many local and export oriented industries. The agricultural support programme of the NDDC aims at turning the youths of the region into great farmers through education and acquisition of operational and managerial skills thus making agriculture more attractive to them especially those currently exploiting or planning to exploit opportunities in other sectors of the economy. Such programme will enhance rural settlement and development,

boost agricultural production, reduce food import and generate additional foreign exchange.

The skills acquisition programme on the other hand aims at providing people with relevant skills such as carpentry; welding and building among others. The programme is designed to make beneficiaries more productive in paid jobs as well as motivate people to establish and manage several ventures. It is expected that the success of such business will turn job seekers into business owners and owners of labour thus assisting to arrest youth's restiveness in the region and nation. The commission eventually intends to develop the scheme into an integrated and comprehensive youth development programme.

In carrying out its functions, constraints of funds have been a limiting factor on the performance of the commission. Main sources of funds to the commission as mandated by the act establishing are 15% of the total monthly statutory allocation due to member states of NDDC, 3% of the yearly budget of oil companies and 50% of the ecological funds due to member states. NDDC is also to collect monies granted or deposited with the commission by the federal government or state government or other bodies or institutions, monies earned as gifts, loans, grants and proceeds which may accrue to it from other assets.

Investigations however have shown that not all that is due to the commission is remitted to it. NDDC for instance receives 10% of monthly statutory allocation from the federal account as against the 15% provided for in the Act. Oil firms prefer to pay 3% of their expenditure instead of basing payments on their budgets; and many others have not yet come to terms of the agreement of the Act.

It is imperative therefore that there should be concerted efforts from legislators and other stakeholders to attract more funds to NDDC so that the commission will be adequately funded and equipped to deal with the issues confronting the

Niger Delta. It is important also to note that in finding a lasting solution to other crucial issues which have contributed adversely to the execution of development programmes in the region, all hands must be on deck; as the task of developing the region is not the peculiar duty of the NDDC but a collective responsibility of local government councils, state government, ministries, and stakeholders who are expected to use the substantial funds allocated to them to develop the area as applicable to their functions.

Table 2.1: List of NDDC Board Chairman, States and Tenor

Chairman	**State**	**Terms of Service**
Onyema Ugochukwu	Abia	2000-2005
Samuel Edem	Akwa Ibom	2005-2009
Air Vice Marshal Larry Konyian	Bayelsa	2009-2013
Senator Bassey Ewo Henshwa	Cross Rivers State	2013-2016
Sen Victor Ndom-Egba	Cross River	2016-2022
Lauretta Onochie	Delta	2023 - present

2.1.9 Cases of NDDC RDP in Abia State.

NDDC have intervened in most rural communities of Abia State, initiating and sponsoring the construction of rural road, schools, health care centers, hospital and the provision of other basis amenities like provision of pipe borne water and electrification projects. Instances of such programs initiated by NDDC in the state include free eye and dental treatment to the people of Owaza Community Ukwa west LGA. This was done in collaboration with Universal Medical Foundation led by Prof. Ejele Adelayo Osaikhvemen and was flagged off by Mr. Samuel Okezi Nwogu who represented the managing director NDDC, Sir Bassey Dan-Abia. Research revealed that over 1,177 people have received free treatment for sight, dental and other ailments.

The skills acquisition programme designed to assist in alleviating poverty by empowering the youths in Niger Delta has also recorded great success while

other forms of partnership with the state government such as the four firefighting trucks donated to Abia State fire service by NDDC and received by Chief Theodore Orji, the governor of Abia State was lauded by the people of the state. At the commissioning of seven new projects in the state namely the Umuahia Road, Umuwaga internal roads, Solar powered water project at Obuzor, Egbelu Okomiriring Road, Obelue electrification project at Umuahia and solar powered street light at Azumiri Ohambele, Obeaku and Akwaete Communities all in Ukwa East L.G.A, the acting managing director of the commission, Dr. Christy Atako, restated the commissions commitment to always intervene in the needs of the communities of the region through projects that will impact positively on the lives the people. Projects such as constructions of roads to assist the people transport their farm produces to major markets and solar powered lights to illuminate the area and increase economic activities. The people of the communities were charged to assume the ownership of the projects and guard them against vandalization.

It is important to state though that NDDC does not function in isolation but is monitored by agencies like the Presidential Monitoring Committee, the Senate and House of Representatives committee. These monitoring agencies regularly take turn to inspect, monitor and supervise the commission activities and projects. At one point the NDDC was probed by the Economic and Financial Crimes Commission (EFCC) for embezzlement of huge funds meant for the execution of projects.

2.1.10 Strategies for Project Implementation

After a project has been carefully planned and scheduled, it is implemented or executed. In the implementation, the need to achieve the mission, time, budget and performance specifications of the project must be borne in mind. Successful

project implementation result from careful planning and scheduling of the implementation function itself. Akobundu (2006) laments that poor projects implementation resulting in project abandonment significantly contribute to the nation's low economic growth rate. The author notes that project implementation consists of all the tasks that bring the project to reality. These tasks are bidding, procurement, construction, delivery, integration tests, acceptance, transfer and take-over (Frankel, 1990).

The New York State Office for Technology in (2012) posited that the purpose of project implementation and control is to develop the product or service that the project was commissioned to deliver, utilizing all the plans, schedules, procedures and templates prepared during the prior project phases. Unanticipated events and situations will inevitably be encountered, and the Project Team and Performing Organization Management will have to deal with them while reducing any impact on the project.

Implementation and control processes such as change control, deliverable acceptance, organizational change management, issue escalation, risk management, and transition demand the performing organization management's support on many levels:

* *Enabling*-creating conditions conducive to the efficient and uninterrupted completion of project work by the project manager and project team;
* *Advising*-imparting additional knowledge to the project manager and the project team.
* *Resolving*- making decisions on changes to project parameters, or choosing a course of action for the project team to pursue.
* *Controlling*- checking the timeliness, quality, content and cost of work being produced, and taking corrective action as necessary.

The function of project implementation is to assemble the project, construct it and make it operational satisfactorily Newman, Warren and McGul (2007). The

procurement function develops the specification, designs, and establishes the performance standards of machinery, facilities and services to be supplied by contractors.

Procurement involves enormous expenditure. The selection of contractors and drawing up of contract agreements must be efficient. Soyeye (2009), note that most construction works in the country are currently being handled by foreign contractors because of their technological advantage and planning strategies. Project supervision involves performance review of project engineering, construction, development and manufacturing projects. Knowledgeable internal or external supervisors must be used. Dlakwa (1997) insists that project inspection teams must be able to measure actual engineering, construction, development and manufacturing aspects of the project against the specifications and standards set. Therefore project supervision requires careful planning, scheduling, timing, frequency of inspections and adequate record-keeping.

It is important to keep a complete record of test or trials of all processes/procedures, shortfalls and deficiencies isolated, the corrective actions agreed and the implementation of such corrective actions. Prior to the final acceptance tests and take over, the permanent operating staff must be adequately trained and tested on the procedures and processes involved in running the project. It is usual for the contractor or suppliers of equipment, facilities and services to train the take-over staff. Project management should give some assistance in the take-over management. Training of project take-over staff is critical. It is generally accepted that significant proportion of large and small projects have failed because training was not effectively performed (Charette and Hallversion, 2012). “A situation applicable to NDDC, projects in Abia State, Nigeria”. Proper training is an important means of transferring technical skill for a developing economy. When the project becomes operational, it is important to evaluate/review the entire effort to determine how

well or how badly the project is achieving its objectives or mission. Such an audit compares actual with expected performance, provides valuable feedback and builds up very useful data base that guides corrective actions. The post-project audit also helps to make the planning and implementation of future projects more efficient.

2.11 National Development and Successful Rural Project Implementation

Development is a complex issue with many different and sometimes contentious definitions. It is a process of growing, changing, improving by expanding or enlarging to become better in the output production of goods and services in an economy. Or it is the process of economic and social transformation that is based on complex cultural, environmental factors and their interactions. Development is empowerment in rural people improving the quality of their life such can only manifest itself in raising the standard of living, creating conducive environment for the growth of people's self-esteem, establishment of social, political and economic institutions and increasing people's freedom to choose from variety of goods and services (Okorafor, 2014). Development is a continuous gradual process of transformation or change from a low and undesirable state to a high and desirable one. The high and preferred state has to be specified of reaching it can be searched for. For the past two or three decades, this desirable state has generally come to be accepted as the elimination of poverty, unemployment and inequality (mostly in income distributions). But, this is seen to be achieved only in the context of a growing economy. Therefore, development is qualitative in nature because it is related to change in economic wants, goods incentive and institutions which revolve around man (Usoroh, 2013). The implication of the above is that if a few individuals can effectively appropriate the resources of the nation and hence tremendously increase their net wealth, the society as a whole would be better

off as such individual would provide job opportunities as well as social amenities to the rest of the people, hence the trickle-down effects.

According to Okorafor (2008), development in the traditional sense was defined as the capacity of national economies which initial economic condition has been more or less static or have been declining overtime to generate and sustain an annual increase in its GNP (Gross National Product) at the rate of 5% to 7% or more. In 1960 and 1970, United Nations (UN) development decades, it was conceived largely in the terms of the attainment of 6% per growth rate of the GNP. By this view, it was assumed that a rapid gain in the overall and per-capital GNP would have a trickle-down effect on the masses in the form of jobs and economic opportunities. It was equally assumed that this will create the necessary conditions for the wider distributions of the economic and social benefits of such growth. Problems of poverty, unemployment and income distributions were therefore relegated to the background. Growth objective became the prime target of developing nation.

National development is said to be a situation that is characterized by growth, progress, modernization, advancement and social transformation. It is a process of transformation that brings about positive outcome, its concept involves not only growth but also, structural institution, social, political and economic transformation (Usoroh, 2013). Technically, it could be defined as increase in economic efficiency of the nation expansion in productivity especially on a sustainable basis such that it is able to adapt to various exogenous and endogenous shocks. It focused on the freedom from famine and malnutrition, freedom from poverty, access to health care and freedom from premature mortality (UN, 2009). To a layman, development is all about consistent and sustainable improvement in the quality of his life and as well as modernization of his environment. In fact, nations are often categorizes based on their level of development and prosperity using indices such as income per capital. For

instance, the national objectives may include strengthening and protection of a nation's sovereignty, building a fair and just society, poverty eradication, improving the quality life of a citizen, creating jobs, fostering of democratic governance that will support the protection of human rights, freedom and rule of laws, creating knowledge based economy and achieving the millennium development goals amongst others (Okereke, 2014).

Any nation that neglects the development and empowerment of the rural communities should not expect meaningful development. Alegbeleye and Ana (1985) reiterated state that "the third world countries have recently come to realize that unless the rural areas are well developed, hardly would any meaningful development occur in these countries."

Okiyi (2003) says that "Rural development is a basis for economic development and information is an important fact in development process. People in rural areas whether literate or not should have access to information to help them become capable and productive in their social and political obligation to become better citizens.

Ogidefa (2010) perceived rural development to involve creating and widening opportunities for (rural) individuals to realize full potential through education and share in decision and action affecting their lives. He viewed it as an effort to increase rural output, create employment opportunities and root out fundamental cases of poverty, diseases and ignorance.

Issa (1998) "the rural populace suffers from acute low productivity, social and economic retrogression due to ignorance as a result to either inadequate or total lack of information to provide to them." Despite the fact that the country is endowed with both human and natural resources; our rural communities are suffering due to absence of indices of development.

Disco (2005) added that "Nigerian people are still dominantly peasant farmers, petty traders, middle men or commission agents." The structure and infrastructural problems, official corruption, unstable political and economic policies, growing insecurity, and unstable power supply hamper this development. Poverty and illiteracy are the major barriers to rural development (Echeme & Ubani, 2010). The government is to take the full blame of this predicament as the resources; services and wealth are rendered with discrimination and neglect.

Obasanjo & Mabogunje (2001) are of the view that "for the rural populace to be able to exercise their sovereignty and assume responsibility for development, they must have necessary resources, adequate revenue allocation from the federal and state sources and internal capacity to access their own revenue locally as well as access to relevant and desirable information for development. All the development indices hinges on successful implementation of development project, especially in the rural areas.

However, implementation is the realization of an application or execution of a plan, idea, model, design, specification, standard, algorithm or policy. It is a specified set of purposeful activities designed to put into practice an activity or programme of known dimensions, described in sufficient details so that dependent observers can detect its presence and strength. Project implementation is the phase where vision and plans become reality (PMBok, 2008). This is the logical conclusion, after evaluating, deciding, visioning, planning, applying for funds and finding the financial resources of a project. It is a process whereby "project inputs are converted to project outputs" as putting in action or to execute the project intentions. Implementation is usually done by the implementing agency (organization) that prepared the project and received funding for it. As the national economy is made up of two main components; the private sectors and the public sectors. A project choice by the two sectors

differs because of the underlying reasons for such choice. The activities of the two sectors however, complement each other. However, Ezenwa, (2002) the goals of the private sector participation is to maximize the anticipated benefits and minimization of the associated losses. These goals are achieved when the wealth of the private sector participant shows appreciable growth presently and in the future. The only way to achieve these is investing in financially profitable projects and it is the main driving force for the private sector choice of projects for implementation. The goals of the public sector on the other side includes the following:-

i. To develop the available natural resource in an efficient manner
ii. To equitable allocate the proceeds of the society's resources to all members of the society,
iii. To develop a system whereby the society's resources will be made available to the future generation of the society.
iv. To reinvest the proceeds of the society resources in the social overhead capital (roads, school, hospitals) etc. for the immediate benefit of the society and for their continuous operations.

These goals can only be achieved, if the public sectors invest in viable social and economic projects. According to Usoroh, (2013), for the public sectors to achieve the stated goals, the national development plan is fashioned in such a way that the economy is divided into sectors like; Agriculture, Manufacturing, Social services, Education, etc. Usoroh, (2013) therefore posited that this is done with a view of spreading investment projects to the various sectors in other to achieve in the desired national goals, viewed from the private or public sectors planning. As plans are statement of intentions, projects are means through which these intensions are realized.

We need to state that the inspirations of national development can only be achieved if the envisaged projects are successfully implemented. The

relationship value of the outputs of the projects is greater than the input values of the project. As this brings about the concept of feasibility study with the attendant cost benefit analysis; simply equates its illustration as (B - C = P) Benefit - Cost = Profit, Therefore, Profits = Revenues - Cost (P = R - C). The decision of selected projects can only be realized if the chosen project is properly or efficiently executed (Ezenwa, 2002). Hence, increase in Nigeria national development.

Having fully implemented with time constraints, an implementation schedule should be prepared ahead of time. It should stage and embrace the period for the decision to invert and achieve the full implementation in the Work Break Down Structure (WBS) of the projects. The network and time component would be used to schedule resources supplied to the project implementers at the appropriate time, and right quantities and qualities (Akpan and Chizea, 2008).

The project evaluation process will be implemented to limit risk and aid in resource management.

2.1.12 Hypothetical Variable for Constraints

Table 2.3 SUMMARY OF RELATED WORKS ON STRATEGIES FOR EFFECTIVE MANAGEMENT OF PROJECT IMPLEMENTATION CONSTRAINTS

AUTHORS	CONTRIBUTIONS	LIMITATIONS
Muronga and Iminza (2020)	Principles of project management, endogenous development, web model of rural development conservation of rural resources, adopting green infrastructure initiative, participatory rural development.	Only Rural Development Projects (RDP). Rural urban development projects are not considered.
Kissflow (2022)	Transparency, PMBP, creating a detailed work breakdown structure, keeping team members engaged effective control, effective task management software etc.	These are encapsulated in PMBS concepts.
Adobe communication Team (2022)	Understand project constraints and plan around them, create a project plan that strategically avoids the main constraints highlighted within your project plan, maintain focus within the project, monitor progress and maintain quality transparency through communication is a key.	The strategies are not streamlined. Every project will require a different level of project management to manage a constraint of a project.

Benz (2022)	Six ways to manage project constraints **Cost:** Cost management plan, resource planning project budget, cost estimation, cost control **Time:** Time management plan, tracking time spent and progress made, accurate schedule and monitoring **Scope:** Project execution processes, detailed good plan, change management. **Risk:** Risk management plan, identify and respond to potential risk, assess the impact on projects, create mitigation or contingency plan monitor risks **Resources**: Resource management plan, teams, equipment, materials etc.	Deficient in collaboration strategy necessary for RDP stakeholders, donor agents and rural dwellers.
Indeed Editorial Team (2022)	Time management constraints: planning, scheduling, monitoring and control. Cost management constraint: analysis of historical data, adding new variables researching the required resources, studying the market. Scope requirement constraints: agreeing on project requirement as soon as possible, developing a system to manage changes, informing the stakeholders.	Not encompassing as it limited to address only time, cost and scope constraints.
Igwe and Use (2018)	Establishment of national public Projects Implementation system, public project governance, departments and agencies to support processes for better public project delivery system, risk analysis, revisiting proven international best practices success factors, monitoring and evaluation, professionalization of project employees, existence of better institutional framework, effective and efficient public procurement contract, stakeholders engagement and management integrative influence of project managers, existence of infrastructure for public project management.	
Malambo	Appropriate policies of Implementation institutional framework which gives conducive environment for these strategies process drivers.	

Based on the overall content analysis, the study identified and selected the following as the independent variables in the management of constraints in the implementation and delivery of NDDC rural development projects in the rural communities in Abia State; Employment of project management best practices, empowerment and conflict resolution mechanism, transparency and collaboration of stakeholders, performance measurement with feedback mechanism, level of skills acquisition, control strategy, skill development of team members, risk management, scope and change management, cultural values and virtues, climatic and weather forecast reports (Kissflow, 2021). The dependent variable is the successful implementation and delivery of NDDC development projects.

2.2 Theoretical Review

2.2.1 Management Theory

Management theories are concepts surrounding recommended management strategies, which may include tools such as framework and guidelines that can be implemented in modern organization. CFI (2015) opines that until the day that machines are able to think, talk, and experience emotions, human will remain the most complicated beings to manage. Humans can never achieve the kind of error free performance that machines provide. On the upside, there are tons of things that machines are not capable of doing, thus making humans indispensible assets. Popular management theories include scientific, systems, contingency, X and Y. For instance, systems management theory proposes that businesses are like human body, consists of multiple components that work harmoniously so that the large system can function optimally. According to the theory, the success of an organization depends on several key elements; synergy, interdependency, and interrelations between various subsystems.

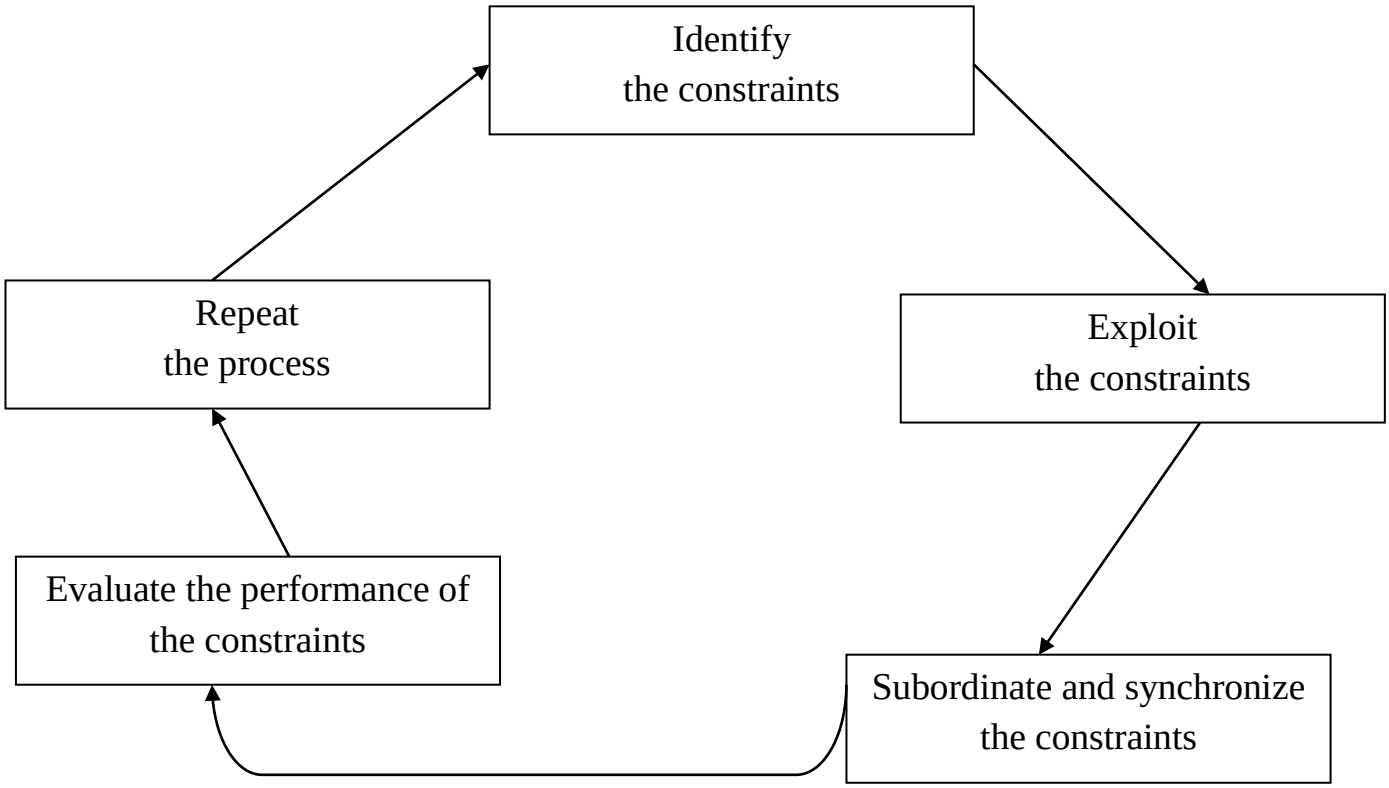
2.2.2 Rural Development Theory

Dependency theorists argued that rural-urban differences are not due to dissimilarities in values, behaviours or social relationship (Green and Zinda 2013). Study.com (2022) asserts that technically capitalism is and early theory of rural development because of capitalism focuses on the production of goods and services that are in demand by a broad population. However in a more formal political science and economics literature, rural development is typically framed by modernization theory and dependency theory. Modernization theory states that in order for a country to be successful in the global market place, it must invest in and develop it's agricultural industries in order to be competitive. Dependency theory argues that this is not sufficient when countries are attempting to complete with the more developed economics of Europe and

North America Study.com (2022) also emphasizes that dependency argues that poor countries become dependent on the market of richer countries for their goods and are therefore dependent on those markets for their own economic, social and political stability

2.2.3 Theory of Constraints

According to Varne (2019), every process has a constraint (bottleneck) and focusing improvement efforts on that constraint is the fastest and most effective path to improved profitability.



Source: Varne (2019)

Fig 2.2 Five focusing steps of TOC (Varne 2019)

The Theory of Constraints (TOC) is a methodology for identifying the most important limiting factors (ie constraint) that stand in the way of achieving a goal and then systematically improving that constraint until it is no longer a limiting factor. TOC uses a process known as the five focusing steps (as shown in figure 2) to identify and eliminate constraints (bottleneck).

TOC provides a powerful set of tools for helping to achieve that goal, including; the five focusing steps (methodology to identifying and eliminating constraints, the thinking process (tools for analyzing and resolving problems; and throughput accounting (a method for measuring performance and guiding management decisions).

The core concept of TOC is that every process has a single constraint and the total process throughput can only be improved when the constraint is improved. A very important corollary to this is that spending time optimizing non constraints will not provide significant benefits; only improvements to the constraints will further the goal (achieving more profit). A success TOC implementation will have the following benefits; increased profit, fast improvement, improved capacity, reduced lead times and reduced inventory (Vorne, 2019) TOC will be a veritable methodology and process for identifying and managing project constraints in the implementation of NDDC projects in Abia state.

This study is also based on the models developed by Pinto and Sleivin (1987) and Schwelbe (2018) on the factors that influence project success positively or negatively. It was revealed in the ten factor model also known as Project Implementation Profile (PIP) model. However, the strength of the ten factors developed by Pinto and Sleivin (1987) and Schwelbe (2008) can be measured based on project achievement within cost, time and technical specifications coupled with client acceptance. This is because project realization within time, cost, specification and user acceptance are known criteria for judging project success. Projects can only be successful if they are delivered on time and within cost and some technical specification. These are the known criteria for judging project success.

However, Kezner (2003) added that a successful project implementation occurs if the project, comes on-time, on-budget, achieves all the goals originally set for it, and is adopted and used by the clients for whom the project is intended. It implies the successful achievement of time, cost and quality objectives, as well as the quality of the project process, Erling et al (2006). Turner (2004) identifies on time, within budget and to specification as the standard for judging success. Erling et al (2006) stated that overall project success deals with the wider and longer term impact of the project, which means both project management success and project product success. They noted that project management can be determined at the end of the project, which means in many cases, success criteria will be determine months or years after finishing the project, especially public projects. Hence, determining if a project is successful is difficult if viewed from the above two success criteria, Erling et al (2006). Baccarini (2009) use the concept project success in a different approach, viewing it as product success, which implies the quality and impact of the end product to the end user (in terms of satisfaction of user(s) needs, meeting strategic organizational objectives, satisfaction of stakeholders' need) when a project execution is finished.

2.3 Empirical Review

A review of a study on effective project implementation of development in Philippine communities by Muneer, (2016) which was set to identify the major factors hindering successful implementation of development with emphasis on Rural Water projects. The study identified poverty, government interference, swampy environment, illiteracy and project location issues. The study adopted a survey method in which 52 participants responded to questionnaire. Result of the analysis by ANOVA revealed that government interference had a direct impact on the level of implementation in water development projects in the rural communities in Philippine. The study further suggested the community

involvement and participation as a solution to the low level of success achieve in the rural water projects.

A study carried out by Igwe and Use (2018) found that the three tiers of government have not really planned, implementation and executed projects with due diligence in accordance with global best practices. Thus, there exist a widespread institutional mediocrity in project execution, deficiency of vision, and inadequate budgetary allocations leading to high cost of project financing and corruption in the long run. The paper recommends among other things the establishment of National Public Projects Implementation Systems (NPPIS), public projects governance, institutional framework and project management offices in ministries, departments and agencies to support processes for better public project delivery system. The paper proposes need for risk analysis, revisiting proven international best practices success factors, monitoring and evaluation, professionalization of project employees, existence of better institutional framework, effective and efficient public procurement contracts, existence of infrastructure for public project management, stakeholders engagement and management and integrative influence of project managers. They therefore recommend and suggest the need to establish a transparent national public projects implementation system, a careful risk management framework, massive infrastructural development by Federal government, stakeholders management etc. Malambo (2021) recommends that to achieve it's objectives successfully, the process of implementing projects must be underpinned by appropriate policies of implementation and institutional framework, which gives conducive environment for these strategic process drivers.

In a related study conducted by Edwardo (2014) in Kenya on the success factors for the implementation of UNICEF school construction projects. The aim is to identify and analyze those factors that are critical for the successful

implementation of UNICEF funded education projects. In the course of his study, he identified four key factors which include; climatic conditions, irregular funding pattern, value orientation and interference by government agencies. After analysis with Chi Square analytical tool, he found out that all the factors are critical to the success of the school projects in Kenya. He therefore suggested that most importantly, government interference should be checked, since it is the most critical factors which has the power to minimize and control the other factors. Also in Tema communities, Ghana. Boateng and Samuel, (2016) identified Corruption, poverty, illiteracy, political interference and funding as the factors that constrain successful performance of community projects in Tema, Ghana. The t-test analysis revealed that funding is a major constraint to successful outcome of most rural development projects in the three communities selected for the study. In conclusion, he recommended improved funding and community orientation if rural projects are to perform successfully.

In Nigeria, Echeme, (2017) published an article on the Project Management World journal on the topic, 'Critical Factors Hindering Successful Implementation of World Bank-assisted LEEMP Development Projects in Imo State. The aim is to identify and evaluate the critical factors inhibiting successful implementation of LEEMP development projects in Imo State. The study identified that non application of research recommendations to close the gap between the World Bank policy makers and the benefitting populace, the continuous interference of politicians in the activities and programmes of World Bank-assisted projects, conflict among the community leaders, lack of sound application of project management techniques, poor documentation & record keeping, low level of intercommunity collaboration, community and local government participation and support. Discriminant Analysis was adopted. His findings revealed that among other things that political interference is the major

factor that affected and is still affecting World Bank-assisted LEEMP development projects in Imo State, Nigeria.

2.4 Analytical Review

2.4.1 Importance of Analytical Review

Stedman (2021) describes data analytics as the process of examining data sets in order to find trends and draw conclusions about the information they contain increasingly, data analytics is done with the aid of specialized systems and software. Data analytics technologies are widely used in commercial industries to enable organizations to make more informed business. According to Stedman, Scientist and researchers also use analytical tools to verify or disprove scientific models, theories and hypotheses. Types of data analytics applications include exploratory data analysis aims to find pattern and relationship in data; and confirmatory data analysis which is applied to statistical techniques to determine whether hypotheses about a data set are through or false.

Analytical techniques methods therefore, analyze problems, facts or status in order to accurately forecast potential outcomes while factoring in project variables. They are used to solve specific issues in a particular task. Unlike management methods that affect the organization as a whole, analytical techniques are both task -and time - limited, thus they only affect a particular project in question (Project Victor 2022). Project Victor (2022) avers that there are different types of analytical techniques used by Project managers and these include simple profiling, cross tabulation and regression analysis. Different analytical techniques are used depending on the analysis goal that project managers need. Shaw (2022) avers that consistent project analysis helps to make the right choice at the right time, leading towards a more successful outcome and the highest return on investment. Lobo (2021) identified four categories of analytics as descriptive, diagnostic, predictive and prescriptive. Some examples of these categories are briefly reviewed as shown below.

2.4.2 Relative Severity Index (RSI)

This method was used to ascertain the level of contribution of the each identified causative factors to project scope creep on a 5-point weighted scale.

$$RSI = \sum_{i=1}^{n} \frac{\text{wifi}}{\text{n}} \text{X} \frac{100}{1} \left(\frac{0}{0}\right) \quad \text{.....2.1}$$

$where\ W_i$ = weight of each factors on 5-point scale

F_i= frequency or number of respondent for factor.

n = total number of respondents.

2.4.3 Earned Value Analysis

Earned Value Management (EVM) according to Schwalbe (2006) is a project performance measurement technique that integrates scope, time and cost data. It can also be used to determine how project is meeting scope, time and cost goals entering actual information and comparing it to baseline.

Earned Value Analysis (EVA) is a method or tool of assessing progress on a project which takes account not only on what has been done (or spent) to date, but also what value has been achieved for that effort of expenditure as Cadle and Years (2008) put it.

The earned value system is used to monitor the progress of work and compared accomplished work with planned work (Oberlender (2000). In the earned value management, baseline includes the following; scope (work breakdown structure tasks), time (start and finish estimates for each task) and cost information (cost estimate for each task).

According to Schwalbe (2006) and Chandra (2009), earned value formulas for performance analysis are:

Earned Value **Ev** = **PV to date XRP** ---------- 2.2

Cost Variance **CV** = **BCWP - ACWP** ---------- 2.3

$\frac{BCWP}{ACWP}$ Schedule Variance (in terms of cost) **SV = BCWP-BCWS**----------

2.4

$\frac{BCWP}{BCWS}$ Cost performance index **(CPI) =** ----------

2.5

Schedule performance **index (SPI) =** ---------- 2.6

Estimate cost performance index (ECPI) = $\frac{\text{BCTW}}{\text{ACWP+ACC}}$ ---------- 2.7

Where:

EV = Earned value; an estimate of the value of physical actually Completed.

RP = Rate of performance: the ratio of actual work completed to the percentage of work planned to have been completed at any given time.

PV = Planned value: that portion of the approved total cost estimate planned to be spent on an activity during a given period.

CV = Cost Variance

BCWP = Budgeted cost for work performed

ACWP = Actual cost of work performed

BCWS = Budget cost for work schedule

BCTW = Budget cost for total schedule

ACC = Additional cost for completion

The **EVA** was used to access variances **CPI,** and **SPI** of the selected **PSCP.** The variances are expressed in terms of cost and time overruns. The amount of cost and time overruns was used to quantify and measure the amount of project scope creep for each project so as analyze and workout measures to contain them. Eva is justified for investigation cost and schedule performances as they were among the constraints against NDDC RDP. The Eva will produce insight for better decision making for future NDDC budgets and schedules.

2.4.4 Multiple Regression Analysis (MRA)

The main multi-variety statistical technique applied in analyzing collected data was multiple regression analysis (MRA) involving coefficient of multiple correlation (R), coefficient of determination (R^2), the F-test and the t-test. The regression analysis is aimed at analyzing the effect of the identified strategies and factors for implementation of NDDC rural development projects in Abia state, Nigeria. The test of significance of the derived model is carried out through a combination of F - test and t - test. In doing this, for instance, the manual application of a regression model of the form:

$$Y=bo + b_iX_i + b_2X_2 + b_3x_3+ ..... + b_nx_n + e_0 \quad (2.8)$$

Where: Y = Predicted level of NDDC development project performance in rural areas of Abia state, Nigeria (Dependent variable).

$X_1, X_2, \ldots X_n$ = major constraining factors in the implementation of NDDC development projects (Independent variables).

$B_0, b_1, b_2 \ldots b_n$ = coefficients to be estimated, eo = Error margin in the estimation.

The regression coefficient (b_i) is estimated using the formula:

$$b_{1=} \quad \frac{\sum x_1 Y \sum x_2^2 - \sum x_2^3 \sum x_1 \sum x_2}{\sum x_1^2 \sum x_2^2 - (\sum x_1 X_2)^2} \quad - \quad - \quad - \quad - \quad - \quad -$$

$$\frac{\sum x_2 Y \sum x_2^2 - \sum x_1^2 \sum x_1 \sum x_2}{\sum x_1^2 \sum x_2^2} \quad - \quad - \quad - \quad - \quad - \quad -$$

$= \quad \sum x_1 \sum x_2 - (\sum x_1 X_2)^2$

bo = $Y - (b_1 x_1 + b_2 x_2$ - - - - - -

The correlation coefficient (R) which measures the magnitude of the relationship between the dependent variable (Y) and independent variables (Xi,X2 ..... X_n) is determined using:

$$R = \frac{N\sum x_1 Y_1 - (\sum x_i)(\sum Yi)}{(N\sum x_i^2 \sum xi)^2 (N\sum Y_i^2 - (\sum y_i)^2}$$ - - - - -

Also the coefficient of determination (R2) which measures the extent of variation in the dependent variable (Y) that is being explained by the variation in the independent variables (Xi) is given by:

estimation. The regression coefficient (bi) is estimated using the formula:

$$R2 = \frac{SSR}{SST}$$ - - - - - - - (2.9)

Where SSR (Sum of Squares due to Regression) is given as:

$$SSR = \frac{b\sum x_1 Y_1 - (\sum x_i Y_i)}{N}$$ - - - - - (2.10)

SST (Total Sum Squares) is given by:

$$SSR = \frac{\sum x_1 Y_{12} - (Ex_i Y_i)^2}{N}$$ - - - - - (2.11)

However, the sum of Squares due to Error is given by:

SSE = SST – SSR

In testing the stated hypotheses, the F and t tests were used.

The F - test statistic is calculated using the formula:

$$F^*cal = \frac{MSR}{MSE}$$ - - - - - - (2.12)

Where MSR (Mean Square due to Regression) is given as:

$$MSR = \frac{SSR}{R}$$ - - - - - - - (2.13)

Where "K" is the number of independent variables.

Also the MSE (Mean Square due to Error) is given by:

$$MSR = \frac{SSR}{}$$ - - - - - - (2.14)

$$n - k - 1$$

Where "n" is the number of observations or sample size.

All the above parameters are summarized in a table of Analysis of Variance (ANOVA) as follows:

Table 2.2 ANOVA Table for Multiple Regression

Sources of Variations	Sum of Square	Degree of freedom (df)	Mean Sum of Square (MS)	F-Ratio
Regression	$SSE = R^2ZY^2$	K	wve^{MSB} / *K*	*MSR*
Error	SSE=SST-SSR	n-k-1	*VSF* / *N-K*	*MSE*
Total	$SST = SSR+SSE = \sum Y^2$	n-1		

Source: Nworuh (2009)

However, considering the vast number of primary data obtained from the field survey, the study adopted a computer based MRA through the use of computer software called Statistical program for Social Science (SPSS) version 17. The SPSS was used to avoid manual calculation for ease of and computational efficiency.

2.5 Research Gaps

Studies and researches have been carried out on the planning and implementation of development projects in various developing countries, none of the authors were able to determine the level of fatigue and variations that development projects experienced. To the best of our knowledge, none of the authors have been able to investigate into the individual and collective effects of the management strategies to tackle constraints in the implementation of NDDC rural development projects in Abia State, Nigeria. Based on the related authors reviewed, Multiple Regression Analysis model which is a multivariate tool have not been adopted in the analysis of the management of the constraints that inhibits NDDC development projects. There is literature gap to identify and explore the factors that constrain NDDC rural development projects and to examine, interface and quantify the cost and time overruns adduced to these constraining factors. The reviewed literature details the vitality of the rural areas

not only to urban areas but also to general development. The reviewed literature also discusses various constraints and challenges that are bedeviling RDP and rural areas in Nigeria, including poverty, over reliance on agriculture for income, decline in income from farming and underdevelopment.

The literature goes a step further to suggest ways by which the challenges and constraints can be addressed. Nevertheless, although reviewed literature seeks to suggest ways of alleviating challenges that are facing NDDC rural development projects in Nigeria, none of them have considered the importance of managing the identified constraints bedeviling the RDA and the rural dwellers. The use of prudent Project management as one of the options, given that there are hundreds of thousands of projects that are geared towards pulling rural out of poverty and underdevelopment. This is why this study is dedicated to this subject of strategies for managing project constraints in the Implementation of NDDC rural development projects in Abia State Nigeria.

CHAPTER THREE

METHODOLOGY

3.1 Research Design

This study adopted a survey and ex-post facto techniques design to be descriptive and inferential. The methods are aimed at obtaining a better understanding of the factors constraining the implementation and delivery of NDDC projects in the rural areas of Abia State for improved project delivery. The objective therefore, is to make better suggestions- on the best way to improve success in NDDC development project delivery in Abia State and other Niger Delta states in Nigeria based on the analysis. The inferential design was adopted to ascertain how Multiple regression analysis (MRA), can be used to analyzed the identified factors constraining NDDC project implementation rate for effective project delivery.

Hence, questionnaires were designed using 5-point Likert's scale to determine the effects of the indentified critical factors on successful implementation of NDDC development projects in Abia State, Nigeria. The Likert summated scale involves a list of statements, related to the nature of the problem and which respondents are required to indicate the degree of agreement or disagreement with each of the statement. A numerical score is assigned to each degree of agreement or disagreement. The scores from all the statements are added up to obtain the total score of each respondent. The ex-post factor research design adopted based on the secondary performance data obtained from sample NDDC rural development projects.

3.2 Characteristics of the Population

The population study is centered on the projects and people directly involved in Nigeria Delta Development Commission activities in Abia State. The population is estimated to be two hundred and sixty (260) consisting of the

project managers, contractors, NDDC project support staff and monitors and the benefiting rural communities in the study area. Due to the nature of the study, it became imperative to study a sample of the selected population in the areas in order to achieve better and accurate results.

3.2.1 Sampling Procedure

Based on judgmental sampling, the study analyzed nine (9) selected NDDC projects that have time and cost data using descriptive statistics involving percentages. The record obtained from the human resources department provided population sizes from each category of respondents of the NDDC stakeholders in the rural development project.

From the population, the study applied the sample size formula; adopted from the Taro Yamane Formular as shown in equation 3.1

$$n = \frac{N}{1 + N(e)^2} \quad - - - - - - - \quad \text{Equation 3.1}$$

n = is the sample size,

N = is the population size, e = is the error term = 5%

Where e = 5% = 0.05, e^2 = 0.0025

Using the judgement / purposive sampling techniques, a total sample size of 228 was obtained from the respective category of respondents with total estimated population size of 260, and these formed the sample and population size of the study. Stratified random sampling was used because of the nature of the population investigated. This population was stratified or categorized into five (5) major groups, comprising the NDDC Project Support staff, Contractors, Consultants, Town Union Executives of the benefitting communities and Beneficiaries of the NDDC development projects in Abia State were selected to assess the questionnaire developed for data collection on the identified constraining factors.

To stratify the sample, the population was divided according to their categories as shown in Table 3.1.

Table 3.1: Determination of sample size (n) from Population Size (N)

Category of Respondents	**Population size (N)**	**Sample Size (n)**
NDDC project support staff	55	48
Contractors	52	46
Consultants	41	37
Town Union Executives of the benefiting communities	54	47
Beneficiaries of the NDDC development projects	58	50
Total	**260**	**228**

Working showing how the sample size was determined from the population size

a. NDDC Project Support Staff

Population size N = 55, e = 0.05, e^2 = 0.0025

$$\therefore n = \frac{55}{1+55\ (0.0025)} = 48$$

b. Contractor

Population size N = 52, e = 0.05, e^2 = 0.0025

$$\therefore n = \frac{52}{1+52\ (0.0025)} = 46$$

c. Consultants

Population size N = 41, e = 0.05, e^2 = 0.0025

$$\therefore n = \frac{41}{1+41\ (0.0025)} = 37$$

d. Town Union Executives of the benefiting Communities

Population size N = 54, e = 0.05, e^2 = 0.0025

$$\therefore n = \frac{54}{1+54\ (0.0025)} = 47$$

e. Beneficiaries of the NDDC development projects

Population size N = 58, e = 0.05, e^2 = 0.0025

$$\therefore n = \frac{58}{1+58\ (0.0025)} = 50$$

Questionnaire were designed and distributed to the respondents directly involved in the planning and implementation of NDDC of development projects in Abia State Nigeria.

Abia State was chosen based on the researcher's judgment and also based on the NDDC project activities going on coupled with the availability of relevant data for the successful completion of this research work.

3.3 Method of Data Collection

The data used in this research are both primary and secondary data. The primary data was collected with the instrument of questionnaire designed in five point Likert scale, while the secondary data which were collected from sources which include the NDDC performance report and extracts from the Federal Office of Statistics (FOS) were physically collected through thorough examination and extract from the operations documentations of the sampled NDDC rural development projects.

To a large extent, these formed the major sources of most of the data used as the basis for the analysis carried out in this study. The following identified strategies for managing project constraints were selected for the study; because they were described to address the five severest constraints from RSI results and findings. They also have modal frequency among the contribution from contributing authors. Therefore they form parameters for the primary data collection for management of project constraints are defined in terms of the independent variables; The multiple regression analysis was used to establish the relationship between the identified independent variables and the successful implementation of the selected NDDC projects.

$\mathbf{X_1}$: = Transparent and Collaboration of Stakeholders

$\mathbf{X_2}$: =. Quality management

$\mathbf{X_3}$: = Risk management

$\mathbf{X_4}$: = Application of Project Management Best Practices (PMBP) with WBS

$\mathbf{X_5}$ = Scope change management (SCM)

Y = Success Level of NDDC Project Implementation

3.3.1 The Questionnaire

The questionnaire for data collection was designed with the objective of obtaining experts' opinion on the identified factors that are critical to the successful implementation of NDDC development projects in the rural of Abia State, Relevant statement which are based on Likert's five-point scale were formulated such respondents could indicate how strongly they agreed disagreed with each of the statement in the questionnaire.

3.3.2 The Likert Five-point Scale

According to Nworuh (2004), the Likert summated scale involves a list of statements, related to the attitude of question for which respondents are required to indicate the degree of agreement or disagreement with each of the statement. A numerical score is assigned to each degree of agreement or disagreement. The scores from all the statements are added up to obtain the total score of each respondent. Kotari (2007) argue that attitude is complex and difficult to measure, and that individuals tend to make inaccurate judgment under difficult circumstances, therefore a scale such as Likert, which improves the measurement of attitude, is ideal.

In this research, "a- 5-point scale" was used to design the questionnaire. For each statement, respondents were requested to select any one position from among a scale that has five categories as follows: Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), Strongly Agree (SA). Each category was

assigned a numerical value, for example, Strongly Agree =5, Agree =4, Neutral =3, Disagree =2, Strongly Disagreed.

3.4 Pilot Study

Pilot studies were conducted to pre-test the study instruments which are validated in the process (Nworuh, 2004). The pilot study for this study was carried out in Isikwuato local government area of Abia State. The drafted questionnaire was administered to thirty (30) respondents from the target respondents in the area. The data collected from them were analyzed and tested for validity and reliability of the research instruments.

3.4.1 Validity Test

The test was conducted to ascertain the content validity of the questionnaire for data collection exercise. To do this, the drafted questionnaire was given to the supervisor and other stakeholders that are knowledgeable in the activities of NDDC projects in Abia State, Nigeria. Error identified and contributions made were effected before the final administration to the selected respondents.

3.4.2 Data Reliability Test

Reliability according to Nworuh (2004) referred to the degree to which it is measuring; meaning that instrument should generate similar results when repeated overtime. Several methods of ascertaining reliability of data exists, but for the purpose of this study, the internal consistency test for the data was done using Cronbach alpha with SPSS software. The alpha was 0.912, confirming the reliability of the research data. The Cronbach alpha lies between 0 and 1, with a value > 6 is considered good.

3.5. Methods of Data Analysis

The methods of data analysis are:

i. Relative Severity Index (RSI)

ii. Earned Value Analysis - (EVA)

iii. Multiple Regression Analysis (MRA)-

RSI was used for determining the Severity Index of each of the identify project constraints so as to prioritize them and come up with action response in developing strategies for managing them.

EVA was used to ascertain cost and schedule variations, cost and time overruns imposed by project constraints in the Implementation of NDDC RDP implementation.

The inferential statistics of MRA was used for test of hypotheses and in establishing the level of relationship and influence the strategic factors have with successful implementation of NDDC RDP in Abia state.

3.5.1 Decision Rule for Testing Hypotheses

Accept the null hypothesis (H_0) if $F^* < F_{1\text{-}a}$; k, n-k-1 degree of freedom, otherwise the null hypothesis (H_0) is rejected. $Fi\text{-}_a$; k, n-k-1 is the critical value obtainable from the standard F-distribution table, and a = the chosen level of significance, which for the purposes of this study is 0.5 or 5%.

The F-Statistic will test the joint hypothesis that:

H_0 $b_i=b_2 =b_3$.....bk = 0

H_A: not all bk are equal to zero

3.5.2 T-test

The null hypothesis (HO) i.e. b = 0 is accepted at level of significance and n-k-1 degree of freedom, if $t^*_{ca}i<ti._a$, n-k-1 degree of freedom. Otherwise the null hypothesis (HO) is rejected, tl-a; k, n-k-1 is the critical value obtainable from the standard t-distribution table, and a = the chosen level of significance, which for the purposes of this study is 0.05 or 5%.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Analysis of Nineteen Selected NDDC Project based on the Performance Data

Table 4.1 below evaluated selected NDDC projects (completed and uncompleted projects) based on their cost and schedule variances to see whether they were completed within cost and schedule criteria. The cost and schedule performance indices were examined to see the level of achievement made in meeting cost and time criteria. These were done with the help of the Earned Value Analysis (EVA) model to determine the level of variations that occurred (if any) and the reasons behind them.

Table 4.1: Result of Relative Severity Index (RSI) Analysis of Project Constraints

		Frequency							
S/N	**Project Constraints**	**SD**	**D**	**N**	**A**	**SA**	**Total weighted score**	**% RSI**	**Rank**
1.	Scope screep	6	2	60	66	74	824	79.23	3rd
2.	Time	22	48	58	50	30	584	56.15	7th
3.	Cost, Budget and Benefits	3	8	46	71	80	841	80.87	2nd
4.	Policy	50	58	32	30	22	499	47.98	10th
5.	Resources	12	17	61	58	60	741	71.25	6th
6.	Risks	12	30	40	52	74	770	74.04	4th
7.	Regulation	82	78	40	8	10	440	42.31	12th
8.	Organization structure	52	70	48	30	8	496	47.69	11th
9.	Environmental and socio-economic constraints	2	6	43	72	85	856	82.31	1st
10.	Technical/Technological	8	30	65	40	65	748	71.92	5th
11.	Capacity	44	66	48	30	20	540	51.92	8th
12.	Quality	70	88	30	8	12	516	49.62	9th

Source: Researcher (2022)

Table 4.2: Earned Value Analysis of selected NDDC projects in Abia State, Nigeria and Their Cost Schedule Variances Using Earned Value Analysis Model

S/N	Title of Micro-Projects	Budgeted Cost	Actual Cost (N)	Cost Variations (N)	% Variations (N)	Planned Time (Months)	Actual time (months)	Time variations (Months)	% Time variations	Project Status
T1	Rehabilitation of two (2 no.) nurses quarters, Afor-Ugiri, Umuahia North	201,125,600	303,579,000	102,453,400	50.94	18	31	13	72.2	Completed
T2	Construction of Amokwc Item/Akanu/Okai Road (9.296km)	736,572,154.50	1,107,271,880	370,699,725.5	50.33	24	96	72	300.00	Completed
T3	Construction of NDDC model six classroom block with an office, a store and vip toilet bloc, Obehie, Ukwa West.	378,839,000	643,123,000	264,784,000	69.99	24	72	48	200.00	Completed
T4	Rehabilitation of Methodist College, Uzoakoli, Bendc.	317,080,900	382,162,147.5	65,081,247.7	20.53	12	20	8	66.67	Completed
T5	Construction Umuda-Isingwu Community Road	62,700,000	69,945,000	7,245,000	11.56	6	13	7	116.67	Completed
T6	Rehabilitation/conversion of one block of two labs, two offices & two stores at Isingwu Comm. Sec. School, Isingwu, Umuahia North	201,500,000	255,623,048	54,123,048	26.86	12	27	15	125.00	Completed
T7	UmuakwuNsulu erosion site in IsialaNgwa L.G.A	398,412,124.09	249,900,249	148,511,249	3.73	36	40	4	11.11	Ongoing
T8	UmuhuEzechi in Bende L.G.A	487,134,445	312,400,218	174,734,227	35.87	36	40	4	11.11	Ongoing
T9	Rehabilitation of community health centre & external works, AforUgiri, Umuahia North	768,168,179	598,312,218	169,855,961	22.11	36	40	4	11.11	Ongoing

Source: Research 2022

Table 4.3: Cost and Schedule Performance Indexes of NDDC Rural Development Projects in Abia State

Project code	Title of Micro-Projects	Budgeted Cost	Actual Cost (N)	Planned Time (Months)	Actual time (months)	Cost performance index (%)	Schedule performance Index	Project Status
Tl	Rehabilitation of two (2 no.) nurses quarters, Afor-Ugiri, Umuahia North	201,125,600	303,579,000	IS	31	66.25	0.58	Completed
T2	Construction of Amokwe Item/Akanu/Okai Road (9.296km)	736,572,154.50	1,107,271,880	24	96	66.52	.0.25	Completed
T3	Construction of NDDC model six classroom block with an office, a store and vip toilet bloc, Obehie, Ukwa West.	378,839,000	643,123,000	24	72	58.91	0.33	Completed
T4	Rehabilitation of Methodist College, Uzoakoli, Bende.	317,080,900	382,162,147.5	12	20	82.97	0.6	Completed
T5	Construction Dmuda-Tsingwu Community Road	62,700,000	69,945,000	6	13	89.64	0.46	Completed
T6	Rehabilitation/conversion of one block of two labs, two offices & two stores at Isingwu Comm. Sec. School, Isingwu, Umuahia North	201,500,000	255,623,048	12	27	78.82	0.44	Completed
T7	UmuakwuNsulu erosion site in IsialaNgwaL.G.A	398,412 J24 .09	249,900,249	36	40	159.02	0.9	Ongoing
T8	UmuhuEzechi in Bende L.G.A	487,134,445	312,400,218	36	40	155.93	0.9	Ongoing
T9	Rehabilitation of community health centre & external works, AforUgiri, Umuahia North	768,168,179	598,312,218	36	40	128.39	0.9	Ongoing

Note: Cost Performance Index = $\frac{\text{Budget cost}}{\text{Actual cost1}} \times 100$ **Source: Researcher 2022**

Scheduled Performance Index = $\frac{\text{Planned time}}{\text{Actual time}}$

Table 4.2 revealed that most of the project ended up incurring extra cost and time than budgeted. The implication is that most of these NDDC projects failed to meet the cost and time considerations. These could be attributed to the identified and analyzed factors as shown on table 4.1; that constrained the implementation and delivery of NDDC projects in Abia State.

The field survey revealed that the variations (cost and time overruns) noticed were believed to be caused by transparency and collaboration of stakeholders, quality management, risk management, application of project management best practices (PMBP) and scope change management. All these factors adduced the propensity that made it difficult for NDDC to achieve the needed development and even made it possible for corruption and other vices that contributed to the cost and time variations witnessed in most NDDC projects selected. These were used as the basis for designing the questionnaire for collecting the primary data from participants form further analysis on the containment of adverse effects of these factors on successful implementation and delivery of NDDC projects particularly in Abia State and Nigeria in general. The cost and schedule project indexes of NDDC rural development projects in Abia State is shown in table 4.3 above. The allocation and returns of questionnaire distributed to selected respondents within Abia State is shown in Table 4.4 below:

4.3. Questionnaire distribution and analysis

Table 4.4: The questionnaire distribution statistics based

Respondent	**Number distributed**	**Number returned**	**Number not returned**
NDDC project support staff	48	45	3
Contractors	46	43	3
Consultants	37	30	7
Town Union Executives of the benefitting Communities	47	45	2
Beneficiaries of the NDDC development projects	50	45	5
Total	**228**	**208**	**20**

As shown in chapter three (methodology), two hundred and twenty eight (228) questionnaire were distributed, two hundred and eight (208) were returned. Therefore, two hundred and eight of the respondents were used as the basis for the analyses in this study which represent 91.23% response rate.

Appendix II present the summary of the two hundred and eight respondents, on their assessment of the effects of the five management strategies for the constraints in the implementation and delivery NDDC rural development projects in Abia State.

4.4 The means scores and standard deviation of each of the factors. (Y, X_i to X_5)

Table 4.5 below, reveals that only 37.4663 is the average level of success achieved in NDDC development project implementation, given the effect of five key constrains; transparency and collaboration of stakeholders, quality management, risk management, application of project management best practices (PMBP) and scope change management, which have strong influence on NDDC project implementation of rural development projects.

Table 4.5 Descriptive statistics showing the mean scores and standard deviation of the constraining factors (208 respondents)

	Mean	Std. Deviation	N
Y	37.4663	4.20706	208
XI	16.9663	4.61606	208
X2	16.6346	4.85053	208
X3	19.4231	4.19614	208
X4	17.1058	5.81838	208
X5	18.4519	4.58285	208

4.5 The correlation matrix for successful NDDC rural development project implementation (Y) and the independent variables X_1 to X_5

Table 4.6 reveals the degree of association between successful planning and implementation of rural development projects and each of the five major predicted factors. The matrix also shows the coefficient of simple correlation between each pair of variables.

Table 4.6 Correlations Matrix

		Y	XI	X2	X3	X4	X5
Pearson Correlatn	Y	1.000	.226	.079	.152	.003	.051
	XI	.266	1.000	.147	.076	.072	.052
	X2	.079	.147	1.000	.016	.019	.297
	X3	.152	.076	.016	1.000	.010	.127
	X4	.003	.076	.019	.010	1.000	.059
	X5	.151	.052	.297	.127	.059	1.000
Sig. (1-tailed)	Y	.	.000	.129	.014	.484	.015
	XI	000	.	.017	.137	.152	.229
	X2	.129	.017	.		.392	.000
	X3	.014	.137	.411	.411	.446	.034
	X4	.484	.152	.392	.446	.	.200
	X5	.015	.229	.000	.034	.200	.
N	Y	208	208	208	208	208	208
	XI	208	208	208	208	208	208
	X2	208	208	208	208	208	208
	X3	208	208	208	208	208	208
	X4	208	208	208	208	208	208
	X5	208	208	208	208	208	208

There is moderate-high degree of association between the success level of implementation of NDDC rural development projects and each of the five management strategies for the constraints. The highest correlation coefficient is 0.0297 existing between quality management (x2) and scope change management (X5). While the lowest correlation coefficient is 0.003 existing between

implementation levels of NDDC projects (Y) and Application of Project Management Best Practice -PMBP with detailed WBS (X4).

4.6 Possible implications of correlation matrix

i.) Since the highest correlation coefficient is 0.297, which is away from 1.000, it means that none of the management strategies exhibited multicollinearity problem. This implies that each of them justified their inclusion as independent variables for analysis.

ii.) The highest correlation was observed between X2 (quality management) and X5. This indicates that transparency and collaboration of stakeholders, quality management, risks management, application of Project Management Best Practice(PMPB) with detailed WBS, is critically important in the move towards effecting any change in the scope of the project and the management of such change i.e Scope Change Management (SCM).

iii.) The lowest correlation between Y (Success level of implementation of NDDC projects) and X4 (Application of Project Management Best Practices (PMBP) with detailed WBS), indicating that best project management practice and proper work scheduling may not have be deployed climatic hence it discouraged high level of achievement in the implementation of NDDC projects in Abia state and other states in the region especially at the rural level.

4.7 The regression of implementation and delivery of NDDC rural development projects on the five constraining factor model

Table 4.9 shows the result of computerized-aided regression that was used to form a model to predict the level of NDDC project implementation while considering the five identified management strategies for the constraints in Abia state as shown below;

Table 4.7:Coefficients of Multiple Regression of Y on $X_1$to X_5

Model	Unstandardized Coefficients		Standardized Coefficients	T	Siq.
	B	**Std. Error**	**Beta**	B	Std. Error
1 (Constant)	26.369	2.375		11.103	.000
X1	.252	.061	.276	4.131	.000
X2	.150	.060	.168	2.121	.035
X3	.195	.067	.195	2.927	.004
X4	.208	.066	.029	3.434	.002
X5	.152	.065	.186	2.883	.008

a Dependent Variable: Y

From table 4.7 the equation/model derived are:

$Y = 26.369 + 0.252X_1 + 0.150X_2 + 0.195X_3 + 0.208X4 + 0.182X_5$.....(4.1)

With the derived equation, we can estimate the level of implementation and delivery of NDDC rural development projects when the values of the five variables are known. The coefficients in the equation indicate the marginal effect of each of the variables on NDDC project implementation in the rural areas, when all the other variables are held constant. They represent the increase in Y, if each variable is increased one unit, while holding all the other variables constant.

All the variable coefficients are positive and indicate positive marginal effects on the planning and implementation of NDDC development projects.

To illustrate, X_2= 0.150 indicates that the level of implementation of NDDC rural development projects increases by 0.150 for every one unit increase in level of skills acquisition of the people, when all the other variables are held constant. We can make similar arguments for each of the remaining variables.

The t-values in column 5 of Table 4.8 are quite large and significant and are used to test the significance of each of the five management strategy for the constraints in the rural development project implementation.

4.8 Multiple Correlation coefficients and Coefficients of Determination

This measures the level of relationship existing between the factors and the level of explained variations in the study analysis. This is shown in Table 4.9 below;

Table 4.8: Model Summary of the Multiple Regressions Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.857(a)	0.728	0.592	1.97802	3.865

a Predictors: (Constant), X5, XI, X4, X3, X2

b Dependent Variable: Y

The multiple correlation coefficients (r) of 0.857 indicated a very strong positive relationship between the level of NDDC project implementation and the five management strategies for managing the constraints in NDDC project implementation.

The multiple coefficients of determination (r^2) of 0.728 indicates the proportion of the variance in the level of success of NDDC project implementation in rural areas explained by all the independent (explanatory) variables. An r^2 value of 0.728 indicates that transparency and collaboration of stakeholders, quality management , risk management, application of project management best practice (PMBP) and scope change management (SCM) jointly account for 72.8% of the variance in the success level of NDDC rural project implementation. Only 27.2% of the variance is not explained.

4.9 Testing the Significance of the Inclusion of HA the Independent Variables in the Model.

The F-statistic provided by the analysis of variance (ANOVA) in multiple regression analysis is suitable for such test, and was used to test the significance of

the inclusion all the independent or explanatory variables (xi to x_5) in the model (4.1) developed. Hence this is to test the significance of the model in predicting the success level in the implementation of NDDC rural development projects in Abia state and other States in the Southeast geopolitical region. That is;

H_0: bi = b_2 = b_3 - b_4 = b_5= 0

H_1: not all b_k = 0; K = 1,2,3,4,5.

Table 4.9 ANOVA Table for Multiple Regression

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	467.186	5	93.437	5.905	.000(a)
Residual	3196.579	202	15.825		
Total	**3663.764**	**207**			

a Predictors: (Constant), X5,**XI,** X4, **X3,** X2

b Dependent Variable; Y

From the ANOVA table above, the regression sum of square (SS) is 467.186, the Mean Square (MS) is 93.437, and an F-ratio value of 5.905 is significant at 0.000 level of significance. At a level of significance of 5%; $F_{0.05}$(5.205) is greater than the tabulated value of 3.48. Since 3.48 < 5.905, we reject H0, and accept HA, and conclude that the inclusion of the five independent variables in the model is significant. Hence the model developed in this study is significant in predicting the level of success achieved by NDDC in the implementation of rural development projects in Abia state and its environment.

Therefore, success level of NDDC project implementation is significantly related to transparency and collaboration of stakeholders, quality management, risk management, application of project management best practice (PMBP) with detailed WBS and scope change management (SCM).

4.10 Testing the Significance of Each of the Strategic Factors (X_1 To X_5)

The dependent variable Y was regressed on each of the independent variables to determine the importance of each factor. The t-test statistics which test the significance between means is effective when the standard deviation of the population is unknown is used to test the significance of the independent factors in the model. We wish to estimate the extent to which each constraining factor contributes to successful implementation of NDDC development projects in the rural areas of Abia state. To do this, Table 4.9 renamed as Table 4.12 becomes important.

Table 4.10: Coefficients of multiple regressions showing the t-calculated values

	Unstandardized Coefficients		**Standardized Coefficients**	**T**	**Sig.**
Model	**B**	**Std. Error**	**Beta**	**B**	**Std. Error**
1 (Constant)	26.369	2.375		11.103	.000
X1	.252	.061	.276	4.131	.000
X2	.150	.060	.168	2.121	.035
X3	.195	.067	.195	2.927	.004
X4	.208	.066	.029	3.434	.002
X5	.152	.065	.186	2.883	.008

Hypotheses Testing

H01: The identified strategies for managing project constraints have no significant correlation with smooth and success Implementation of NDDC RDP in Abia State. From table 4.11, with p-value of 0.000<0.5, hence the test is significant. All the Strategic factors correlate with the successful Implementation of NDDC RDP in Abia State.

H02: The level of relationship between transparency and collaboration of stakeholders and successful implementation of NDDC project in not significant.

Table 4.12 from Appendix III shows that the t-cal value of 4.131 is significant in the prediction of Y given the p-value of 0.000. We therefore reject H01 with a conclusion that the level of relationship between transparency and collaboration of stakeholders have significant effect on the successful implementation of NDDC project.

H03: Quality management and control have no significant relationship with hitch-free implementation of NDDC projects.

The t-cal value of 2.121 is significant at 0.035 level, implying that at 0.05 level of significant X_2 is positively significant to Y. We therefore reject $H0_3$, with a conclusion that the quality management & control is critical to the successful implementation of NDDC rural development projects in Abia State.

H04: There is no significant relationship between the level of risk management with feedback responsiveness and smooth implementation of NDDC projects in Abia State.

The t-cal value of 2.927 is significant at 0.004 level, implying that the level of risk management with feedback responsiveness have significant effect on the smooth implementation of NDDC in rural development project. We therefore reject $H0_4$.

H05: Application of Project management best practices with detailed work breakdown structure have no significant relationship with smooth implementation of NDDC projects in rural communities Abia State.

The t-cal value is significant at 0.002 level implying that at 0.05 level of significant, X_4 as indicated in equation 4.1(model) is a significant of Y. We therefore, reject $H0_4$ and conclude that PMBP with detailed WBS would significantly mitigate project constraints and application improve the level of success in the implementation and delivery of NDDC development project in the rural communities in Abia State.

H06: There is no significant relationship between level of scope change and successful implementation of NDDC projects in Abia State.

The t-cal value of 3.383 is significant at 0.018 level, implying that at 0.05 level significance, X_5 as indicated in the model (equation 4.1) is a significant predictor of Y. We therefore reject $H0_6$ and conclude that the level of success achieved in implementation of NDDC project is also hinged on effective control strategy employ in the process of execution and project delivery in Abia State.

From the above test and analysis, we observed that the level of transparency and collaboration of stakeholders exerts the greatest effect on successful implementation of NDDC rural development projects.

Table 4.11: Priority Ranking of the Five Constraining Factors Above

Management Strategies	t-value	p-value	Ranking of the factors
X_1	4.131	0.000	1
X_2	2.121	0.035	5
X_3	2.927	0.004	3
X_4	3.434	0.002	2
X_5	2.383	0.018	4

Based on the priority ranking result above, transparency and collaboration of stakeholder (X_1) is the most critical variable for minimizing the constraints in the implementation of NDDC development project in Abia State. This is followed by application of project management best practice with detailed work breakdown structure (X_4), level of risk management (X3), scope change management with feedback responsiveness (X5) and finally level of quality management and control strategy (X2).

4.11 Discussion of Results

The earned value analysis indicated significant cost and time variation and overruns due to the variable that constrained and hindered successful implementation and delivery of NDDC projects. The method of MRA generated a filted regression model that can be used to predict or precast the performance of NDDC rural project so as to creatively develop strategy for performance improvement when the constraining variables are taken into consideration. The result obtained from the hypothetical testing of recommended strategies for

managing the identified project constraints showed that the strategies correlated for the successful implementation of NDDC RDC in Abia State.

The results achieved is in consonant with the study of Kissflow (2022) that identified that transparency, PMBP, creating a detail work breakdown structure, keeping team engaged, effective controls and the use of effective task management softwares are ingredients that ensure successful delivery of projects undertaken.

The results from this research work also agree with work done by Adobe Communication Team (2022) which indicated that the key to successful project delivery is for project plans to be created to strategically avoid highlighted/main constraints through project monitoring, maintaining project quality and; transparency through effective communication.

Igwe and Use (2018) concluded that establishing a national public project implementation system, monitoring and evaluation of ongoing project, risk analysis, professionalization of project employees, stakeholder's engagement among other would lead to the successful implementation. The results from this research work are in alignment with this position.

The model derived from this work can also provide avenues the improve project efficiency, manpower, time, facility and aid financial planning which by extension will help to reduce to the barest minimum, the impacts of the identified constraints that hinder NDDC rural development projects in Abia State.

Similarly, the result of data analysis indicate that

1. Most NDDC project in Abia State suffered fatigue in the sense that they were not realized without time and cost overrun as depicted in the schedule performance index shown in Table 4.2 and 4.3. The descriptive analysis

revealed that the average success achieved by NDDC in the implementation of rural development projects in Abia State is 37.4662 which are low and does not support the needed development of rural areas in Abia State.

2. The correlation analysis show that all the variables are really independent as there was no case of multicolinearity. The highest correlation coefficient is 0.297 existing between quality management(X_2) and scope change management (X_5). The covert correlation coefficient, 0.003 existed between success level of NDDC project implementation (Y) and implementation of Project Management Best Practices (PMBP) with WBS (X_4) (see table 4.7).
3. The model developed (4.2) show that all the strategic factors are positively related to the success level of implementation of NDDC projects in Abia State and other south eastern states with transparency and collaboration of stake holders having the highest influence (see table 4.9). Transparency is often considered a key factor in constraints reduction for successfully managing project constraints. With transparency and collaboration every stakeholder involved in the process know about the priorities and objectives of the project. By this poor and ineffective communication can be avoided. Transparency and collaboration in project implementation enhance the productivity of team member involved in the project hence project constraints will be reduced while a high level of success can be achieved. Clearly this factor played a critical role in the outcome of projects Abia state. Again the lack of implementation of Project Management Best Practical (PMBP) with work breakdown structure (WBS) as well as the engagement of skilled team members is a crucial constraint with far reaching effect on the level of success achieved in the implementation of NDDC projects. In line with (Echeme & Ubani, 2010) who attributed that contention from various quarters attributed the low success level of

implementation of NDDC projects borders around instability in government policies, the insincerity of government and even the governed, the inflation of contract amounts, kick backs and the wrong manner in which contracts are awarded. Often times communities resort to collecting huge payments from contractors before commencement of project. All of these often have heavy implication on funds available for the execution of awarded projects and so we find that there are challenges in the deployment and management of resources, this includes the engagement of skilled team members. Also the propensity to implement project management best practice (PMBP) with work breakdown structure is greatly reduced due to the inherent cost implication which contractor often times are not willing to bear in a bid to maximize profit. In the overall project managers and worker resort to cut corners in order to meet up with project target. This has resulted to poor quality and abandoned projects littered around NDDC areas of intervention, especially in Abia state. Important too is the low level of performance measurement and feedback responsiveness coupled with the non-adoption or low adoption of effective control strategy. It was noted that project performance or deliverables at milestones was not always benchmarked against project scope in order to ensure that the guaranteed set of deliverables tied to the projects are produced. It is important to note that these expected deliverables are always factored to the project budget and schedule and taken into cognizance in the contract award amount and project delivery time which are clearly stated in the contract terms. There was obvious low consideration in managing scope risk and setting scope tolerance ranges as a control strategy in the execution of NDDC projects in Abia State. Also when deliverable were matched or measured against budget and schedule they were found to be grossly below expectation in respect to

stated resources made available for the execution and implementation of NDDC projects in Abia state. Again there was hardly any record of stakeholder engagement in some cases (and when there are, very far in between) when genuine cases of scope creep threatened to affect project deliverable. There were no records of guidelines that were discussed to address and manage such issue.

4. The hypothesis testing revealed that all the identified strategies for managing project constraints significantly affected the success level in the implementation of NDDC projects. Priority ranking of the project of the strategies for managing project constraints indicate that transparent collaboration of stakeholder is the most critical variable in predicting NDDC development project success while quality management and control strategy is the least important variable in predicting successful implementation of NDDC rural project in Abia State.

We can therefore say that the finding made in this study have to a large extent empirically justified the call for transparency and collaboration of stake holders, engagement of qualified and skilled work force in project execution, the adoption of PMBP with WBS, effective application of risk management and change control strategies with a mechanism/channel for feedback responsiveness. More important though is that having identified and clearly shown that the above variables are constraints that impede the success level in the implementation of NDDC projects in Abia State, identifying strategies for the management of the project constraint is key and more beneficial in order to minimize their impact as constraints on project deliverables, and thus significantly enhancing the level of success in the implementation of NDDC projects in Abia State.

Strategies for Managing constraining Factors in Project Management

It is important to understand that project constraints can never be eliminated and each project expectedly will have a different set constraints strategies to properly manage them. Project constraints can be categorized as the following;

1. **Scope: -** Project specific goals are defined under scope. The final vision of the project is influenced by the time and funds available. It is important to keep end goals realistic and attainable otherwise the risk of losing momentum or resources before completion of project abound. This constraint however can be managed by involving all team members for the beginning of the project so that they can help chime in when it comes to breaking down projects into manageable chunks. This way problems that are bound to inhibit or negatively impact the project are addressed proactively. Benz (2022) suggests project execution process change management and detailed good plan as part of scope change strategy in managing project constraints.
2. **Time:** This is the approximate time needed to bring the project to completion. To address constraint of time, it is necessary to include deadline for every phase as well as a final date for completion and then high light areas which are most likely to create problem. Implementing project management best practices and dynamic management and WBS by balancing the work load on the team help and with time constraint will promote successful project completion Benz (2022) also emphasizes the need for time management plan, tracking time spent and progress made, accurate schedule and monitoring in managing project constraints for successful implementation.

3. **Cost:** Every project will be guided by the funds available. If resources are limited, then project scope and time line should be adjusted accordingly. Final project cost should include money for materials, labour, quality control, contractors and more, with extra funds set aside for unexpected cost that could arise along the way during project execution. Above all it is imperative to ensure adherence to the master budget. Cost is a component of PMBP, and it's management requires cost management plan, project budget, cost control cost breakdown structure etc.

4. **Risk:** Projects are fraught with risks especially during the implementation stage. It could be on this premise that the study inferred that risk management is the third in ranking as a formidable strategy in the management project constraints for implementation of NDDC RDP in Abia State. According to Benz (2022) risk management plan, identify and response to potential issues that might arise in the projects, assess the impacts on projects, create risk mitigation and contingency plans and monitor risks, all of which should be systematically followed-up.

5. **Quality:** Quality goes beyond the project scope it determines whether the final result in suitable enough to meet the needs of stakeholders. Where quality is a key goal, more serious time needs to be devoted to managing the production. Hence it is important to understand the nuances of project quality management and create a system for checking of each stage of the project (milestone) and stakeholders should be involved at each key stage. This is necessary to keep up with quality control.

6. **Sustainability:** This involves thinking about the long term sustainability of the project which should be considered as being very important questions such as the following among others need to be asked. Will future users find the project user friendly and easy to navigate? Can project be updated to

meet changing needs of stakeholders or would it fit current trends several years from now? Sustainably constraints should be considered in the light of ecologically sustainable potentials and the economic potential in addition to the criterion of economic profitability and social impact. This is important because by considering and managing this constraint there would be saving in the national budget, the needs of the people can be fulfilled, natural resources are conserved, co-ordination between natural resource and people are engendered and national resources for future generations are conserved.

7. **Customer Satisfaction:** By considering all stakeholders needs before starting a project, to become possible to drive the project in the right direction and keep it on track. The implication too is that a flexible mind set is needed by project managers and a feedback responsiveness mechanism also need to be put in place, so that is possible and preferably better to adjust the project schedule where necessary in order to do things rights. The agile methodology is an effective approach that can be adopted in achieving customer satisfaction.

In summary, no one can predict or prepare for every possible problem that is bound to arise within a project, but with enough planning, brainstorming and acute attention some of these constraints can be addressed in advance while staying focused throughout the project can help identify new problems as they appear. This level of responsiveness is crucial. It is worthy to note that constraints can sometimes be a good thing as limited resources might necessitate a significant scale back of a project and in turn result in a final project that become more efficient and effective. The findings concurred with kiss flow (2022) who emphatically stated that the only way to properly manage project constraints is by

transparency, implementation of PMBP, effective task management software and maintaining control over projects.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Summary

Implementation of development projects contribute meaningful to the economic growth and development of any nation. Success in project implementation is a function of favourable synergy of internal and external environmental factors. There have been arguments from various quarters that the reason why the Nigerian economy seemed stagnated and public projects not properly implemented is attributed to lack of proper management of constraint that impede successful implementation of projects, especially development projects in the country.

This research work using relative severity index (RSI) analysis and earned value analysis model was able to determine the nature and scope of the constraint that contributed to the low success level of implementation of NDDC projects. 12 rural development projects constraints were identified and shown in their ranking order based on the RSI analysis. The top 5 project constraints in order of severity were, environmental constraints, cost, budget and benefit constraints, scope creep, risk and technical/technological constraints.

The nature and scope of these constraints were observed to increase the impact of both the internal and external factors on project implementation. The constraints as indentified in their expanded scope, had a major affect on the level of success achieved in the implementation of NDDC Projects in Abia state. The results and findings of the study inferred that the following strategies are significant in enhancing management of project constraints; the degree transparency and collaboration among stakeholders, the skills of project team members, project risk

management with responsive feedback, extent of application of PMBP and detailed WBS and lastly the use of effective control methods.

Two hundred and eight respondents with direct experience on the activities of NDDC projects expressed their opinions on these constraining factors and expressed their opinion on managing then as they impact on success level of NDDC project implementation. Multiple regression analysis (MRA) was used to determine the factors that most constrained the success of NDDC projects in Abia State. Management strategies were then identified and recommended for the effective handling of these constraining factors. The tactical application of these strategies will be significant to NDDC project implementation and as such capable of improving project success rate.

5.2 Recommendation

Based on the results and findings of the study, the following recommendations were proffered;

i. Effective stakeholders management and communication which should be periodic at short interval of time
ii. SWOT analysis and environmental scanning prior to project Implementations. These will uncover the risks and constraints so as to provide action respond plans for dealing and managing them.
iii. Contingency plans should be put in plan to deal with project constraints associated with uncertainties and risks
iv. Identification and management of project complexities. This is a major source of constraints in the Implementation of RDP.
v. Application of PMBP with effective task management software as to maintain control over budget, schedule, quality resource and scope.

5.3 Contributions to Knowledge

(i) The study uncovered project constraints bedeviling successful implementation of NDDC RDP and was able to investigate into the individual and collective effects of the management strategies to tackle constrains in the implementation of NDDC RDP project.

(ii) The study contributed to the literature gap noticed in the identification and exploration of the factors that constrained NDDC RDP with focus to examine, interface and quantify the cost and time overruns adduced to the constraining factors.

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APPENDIX I

QUESTIONNAIRE

Department of Project Management Technology,
School of Management Technology,
Federal University of Technology Owerri,
P.M.B. 1526.
12-04-2022

The Management of
Niger Delta Development Commission
(NDDC).

Dear Sir/Madam,

REQUEST FOR ASSISTANCE

I am a postgraduate student of the above named institution, conducting a research on the project topic, Strategies for Managing Project Constraints for Successful Implementation and Delivery of Niger Delta Development Commission (NDDC) Rural Development Project in Abia State, in Partial Fulfillment for the award of a Master (M.Sc) in Project Management Technology.

To enable me conduct a meaningful research, I have designed the attached questionnaire which I hope you will find conducive and give time to answer. I assure you that any information given will be used only for this project and will be treated in confidence.

Thanks for your co-operation.

_____

Val-Obiajulu Onyema.

INSTRUCTION: Think of a rural development project you have executed recently. Using the scale provided, please circle or tick the cell that indicted the extent to which you agree or disagree with the statement as related to strategies for managing project constraints for successful implementation of rural development projects you have executed, given the five indentified strategic factors. The values attached to the scale are as follows:

SD = Strongly Disagree = 1 point

D = Disagree = 2 points

N = Neutral = 3 points

A = Agree = 4 points

SA = Strongly Agree = 5 points

	INDEPENDENT VARIABLES ($X_1 – X_5$)	**SD**	**D**	**N**	**A**	**SA**
	Degree of transparency and collaboration among stakeholders (X_1)					
1.	Project brief by NDDC, Contractors and host community					
2.	Existence of effective and seamless communication among the stakeholders					
3.	Transparency and collaboration with consultants and subcontractors					
4.	Youths and community leaders were cooperated with in the course user's requirements.					
5.	Effective collaboration and management of supplies, suppliers and vendors of materials.					
	Quality Management and Control (X_2)					
6.	Quality of project design is always reviewed and upgrade					
7.	Materials are inspected for quality conformance					
8.	Quality management plan is in place prior to project implementation					
9.	No framework for quality monitoring and evaluation					
10.	Stakeholders are usually informed of quality standards prior to project implementation.					
	Application Project Management Best Practices (X_4)					

11.	Project budgeting and cost control					
12.	Project are scheduled with scheduling tools prior to implementation					
13.	Existence of framework for project monitoring and evaluation					
14.	Periodic evaluation of progress performance					
15.	Project quality plan is usually put in place prior to the implementation state.					
	Level of Risk Management (X^3)					
16.	Risk management plan is put in place					
17.	Risks are identified and responded to issues arising					
18.	Risks mitigation measures and contingency plans are created					
19.	Risks likelihoods are monitored during the project implementation					
20.	Availability of risk audit checklist					
	Project Scope and Change Management (X^5)					
21.	Existence of good plan for scope change management					
22.	Programs for containment of scope creep					
23.	Contingency plans for addressing scope change					
24.	Availability of scope and change management checklist					
25.	Detailed planning and work breakdown structure to contain scope change					
	DEPENDENT VARIABLE: Y = Success Level of Project Implementation					
1.	Transparency and collaboration among NDDC, contractors, subcontractors and suppliers of materials.					
2.	Collaboration and cooperation with host Communities, Village Head, Town Union executive and Youth.					
3.	Timely release of budget for the NDDC project					
4.	Accurate cost estimation and cost control					
5.	Project implementation progress was according to schedule					
6.	Time management plan and tracking time spent					
7.	Continuous progress monitoring and evaluation during project implementation.					
8.	Application for principles of quality function deployment in-built control mechanism for project quality implementation					
9.	Availability of Risk contingency plan and mitigation measures					
10.	Availability of mechanism for resolving scope changes during project implementation.					

APPENDIX II

Road Projects

DESCRIPTION	LOCATION	LGA	STATUS
Construction of Obahu-Umuitaru-Umuadienwe-Ikpoku-Owo Asa-Ngayiekwe Road (3.041km phase 1)	Obahu-Umuitaru-Umuadienwe-Ikpoku-Owo Asa-Ngayiekwe	Ukwa West	On-going
Construction of Akwete-Umuagbai Road project extension to Obete Ndoki	Akwete-Umuagbai Obete Ndoki	Ukwa East	Completed and commissionable
Rehabilitation of Nkwoagu-Ihube Road	Nkwoagu-Ihube	Umunneochi	Completed but not commissionable
Construction of Umuda-Isingwu Community road	Umuda-Isingwu	Umuahia North	Commissioned
Rehabilitation/asphalt overlay of Akwaete-Umuagbai (8km)	Akwaete-Umuagbai	Ukwa East	Complete but not commissionable
Construction of Assa Township	Assa	Ukwa East	On-going
Construction of Amokwe Item/Akanu/Okai Road (9.296km)	Akanu/Okai	Bende	On-going
Construction of Ntalakwu Road (7.747km)	Ndoro Ntalakwu	Ikwuano	On-going
Construction of Umuwanwa-Obizi Road	Umunwanwa Obizi	Umuahia	On-going
Road project	Owaza	Ukwa West	Commissioned

Source: Niger Delta Development Commission (2012)

Rural Water Projects

DESCRIPTION	LOCATION	LGA	STATUS
Owaza water scheme	Owaza	Ukwa West	Completed commissionable
Umuorie water scheme	Umuorie	Ukwa West	Completed commissionable
Okikpe water scheme	Okeikpe	Ukwa West	Completed commissionable
Umukalu water scheme	Umukalu	Ukwa West	Completed commissionable
Obodo water scheme	Obodo	Isikwuato	Completed commissionable
Obuohia water scheme	Obuohia	Ukwa West	Completed commissionable
Uzuaku water scheme	Obuohia	Ukwa West	Completed commissionable
Ogwe water scheme	Ogwe	Ukwa West	Not mobilized to site
Umuelechi water scheme	Umuelechi	Ukwa West	On-going
Augiri water rehabilitation	Afor-ugiri	Umuahia North	On-going

Source: Niger Delta Development Commission (2012)

APPENDIX III

Solar Powered Water Projects

DESCRIPTION	LOCATION	LGA	STATUS
Contract for the solar powered project	Okpuaja	Obingwa	On-going
Contract for the solar powered project	Ugwati community	Ukwa West	On-going
Contract for the solar powered project	AkpaiMbato	Obingwa	On-going
Contract for the solar powered project	Umuiku	Ukwa West	On-going
Contract for the solar powered project	Umuagbai	Ukwa West	On-going
Contract for the solar powered project	Umuaghala	Ukwa West	On-going
Contract for the solar powered project	Umubulungwu-ozar	Ukwa West	On-going
Contract for the solar powered project	Okohia-ipu	Ukwa West	On-going
Contract for the solar powered project	Umuokwo	Ukwa West	Completed commissionable
Contract for the solar powered project	Akete	Ukwa West	On-going

Source: Niger Delta Development Commission (2012)

Solar Powered Water Projects

DESCRIPTION	LOCATION	LGA	STATUS
Contract for the solar powered project	Okpuaja	Obingwa	On-going
Contract for the solar powered project	Ugwati community	Ukwa West	On-going
Contract for the solar powered project	AkpaiMbato	Obingwa	On-going
Contract for the solar powered project	Umuiku	Ukwa West	On-going
Contract for the solar powered project	Umuagbai	Ukwa West	On-going
Contract for the solar powered project	Umuaghala	Ukwa West	On-going
Contract for the solar powered project	Umubulungwu-ozar	Ukwa West	On-going
Contract for the solar powered project	Okohia-ipu	Ukwa West	On-going
Contract for the solar powered project	Umuokwo	Ukwa West	Completed commissionable
Contract for the solar powered project	Akete	Ukwa West	On-going

Source: Niger Delta Development Commission (2012)

APPENDIX IV

Electrification Projects

DESCRIPTION	LOCATION	LGA	STATUS
Installation of 300kva/11.0.45kv transformer for Umuda Isingwu	Umuda-Isingwu	Umuahia North	Completed and commissionable
Electrification project	Umualoma	Umunneobi	Completed commissionable
h.t. extension and installation of transformer	Umunteke	Ukwa West	Commissioned
Electrification project	Ikpokwu	Ukwa West	Commissioned
Electrification project	Ikwuriator	Ukwa West	Commissioned
Electrification project	ObuzorNgwa	Ugwunagbo	Commissioned
Umuelechi I.t. extension	Umuelechi	Ukwa West	Commissioned
Electrification project at Umuorie-Umukalu h.t. line	Umuorie-Umukalu	Ukwa West	Completed but commissionable
Extension of electricity	Owaza	Ukwa West	Not mobilized
Augiri water rehabilitation	Afor-ugiri	Umuahia North	On-going

Source: Niger Delta Development Commission (2012)

Electrification Projects

DESCRIPTION	LOCATION	LGA	STATUS
Rehabilitation of two (2 no.) nurses Afor-ugiri quarters, one (1 no) private ward	Afor-Ugiri	Umuahia North	Completed and commissionable
Construction of NDDC model six Aba South classroom block with an office, a store and vip toilet block	Abia South	Aba South	Completed Commissionable
Construction of NDDC model six Obehie classroom block with an office, a store and vip toilet block	Obehie	Ukwa West	Completed commissionable
Rehabilitation of Methodist college	Uzuakoli	Bende	Completed Commissionable
Construction of NDDC model six classroom block with an office, a store and vip toilet block	Orieremeany	Umuahia North	Completed Commissioned
Rehabilitation/conversion of one block of two labs, two offices & two stores at Isingwu Comm. Sec. school	Isingwu	Umuahia North	Completed Commissionable

Construction of NDDC model six Ogbodi classroom block with an office, a store and vip toilet block	Ogbodi	Ogbodi	Completed Commissionable
Construction of NDDC model six Umukalu classroom block with an office, a store and vip toilet block	Umukalu	Ukwa West	Completed commissionable
Construction of NDDC model six classroom block with an office, a store and vip toilet block	Amaiyi-obiloh	Isikwuato	Commissioned
Rehabilitation of community health Afor-Ugiricentre& external works	Afor-ugiri	Umuahia North	On-going

Source: Niger Delta Development Commission (2012)

Performance Data of Sample Selected NDDC Projects in Abia State

S/n	Title of micro-projects	Budgeted Cost (N)	Scheduled Time (months)	Actual Cost (N)	Actual Completion Time (Months)
1.	Rehabilitation of two (2 no.) nurses quarters, Afor-Ugiri, Umuahia North	201,125,600	18	303,579,000	31
2.	Construction of Amokwe Item/Akanu/Okai Road (9.296km)	201,572,154.50	24	1,107,271,880	96
3.	Construction of NDDC model six classroom block with an office, a store and vip toilet block, Obehie, Ukwa West.	378,839,000	24	643,123,000	72
4.	Rehabilitation of Methodist College, Uzoakoli, Bende.	317,080,900	12	382,162,147.5	20
5.	Construction Umuda-Isingwu Community Road	62,700,000	6	69,945,000	13
6.	Rehabilitation/conversion of one block of two labs, two offices & two stores at Isingwu Community Secondary Shool, Isingwu, Umuahia North	201,500,000	12	255,623,048	27
7.	Umuakwu Nsulu erosion site in Isiala Ngwa L.G.A	394,412,124.09	36	249,900,249	40
8.	Umuhu Ezechi in Bende L.G.A	487,134,445	36	312,400,218	40
9.	Rehabilitation of Community Health Center & external works, Afor Ugiri, Umuahia North.	768,168,179	36	598,312,218	40