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Performance evaluation of the Petroleum Trust Fund Educational and Health Infrastructure Rehabilitation Programme in North Western Nigeria

Peer reviewed

Abstract

The government of Nigeria removed the subsidies on the prices of petroleum products in 1994 and set up the Petroleum (Special) Trust Fund (PTF) to use some of the extra revenue to rehabilitate infrastructure nationwide. This evaluation was carried out to provide an assessment of the programme in view of its scrapping in 2000. The Earned Value Technique was used to analyse the projects in terms of the time, cost, quality and other objectives using data obtained from PTF and the consultants. The study concludes that the programme suffered no cost overruns and the quality of work was generally satisfactory, but the programme suffered a time overrun of 38,5%. At the end of the scheduled completion period 72,6% of the projects were behind schedule while 17,6% were at zero completion.

Keywords: Infrastructure, rehabilitation, cost, time, quality, performance.

'N EVALUASIE VAN DIE WERKVERRIGTINGE VAN DIE PETROLEUM-TRUSTFONDS SE OPVOEDKUNDIGE- EN GESONDHEIDSORG-INFRASTRUKTUUR-REHABILITASIE-PROGRAMME IN NOORDWES-NIGERIË

Die Nigeriese regering het in 1994 alle subsidies afgeskaf op die prys van petroleumprodukte en die Petroleum (spesiale) Trustfonds (PTF) in die lewe geroep om ekstra belasting aan te wend ter verbetering van die land se infrastruktuur. Hierdie artikel gee 'n oorsig van die ramings wat gelei het tot die skraping van die program in 2000. Die waarde-verdiens-tegniek is gebruik om die projekte te ontlee in terme van tyd, koste, kwaliteit en ander doelwitte ten opsigte van die data wat deur die Petroleum-Trustfonds (PTF) en ander konsultante verskaf is. Die studie dui daarop dat die program wel binne die kosteraamwerk geskied het en dat die gehalte van die dienste gelewer oor die algemeen goed was. Die program is egter gekortwiek deur 'n 38,5% oorskryding van die skedule. Teen die einde van die datum van voltooiing was 72,6% van die werk agter en 17,6% ongedaan gelaat.

Sleutelwoorde: Infrastruktuur, rehabilitasie, koste, tyd, kwaliteit, prestasie.

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1. Introduction

In October 1994 the Federal Government of Nigeria removed the subsidies on petroleum products and raised their prices to boost finances. The government promised to put part of the extra revenue generated into a special account to rehabilitate public facilities for the benefit of the citizenry. To this end the government established by Decree No. 25 of 1994 the Petroleum (Special) Trust Fund (PTF) and constituted a Board of Trustees to manage the account and implement the Fund's programmes. To underscore the importance the government attached to the programme, a former head of state was appointed to head the Board.

The PTF was established to function as an intensive financial intervention agency within the framework of the then military government's development strategy. It sought to revive public confidence in the government's ability to creditably implement development programmes. Thus, according to the Petroleum (Special) Trust Fund (PTF, 1995a), the operational philosophy of the Fund was, "to achieve an efficient, honest and timely implementation of projects that will have positive impact in the upliftment of the general conditions of living for all Nigerians". In its mission statement the Petroleum (Special) Trust Fund (PTF, 1995a: 1) sought:

[...] to establish and operate an open, modest and effective organisation for the purpose of achieving efficient, honest and timely execution of carefully designed socio-economic projects, spelt out or implied by the enabling Decree but carefully prioritised to enhance the general condition of living for all Nigerians in the shortest period of time possible.

The then Head of State declared at the inauguration of the Board of Trustees of the PTF that:

Over the years, a fundamental element of distrust in public accountability has embedded itself in the psyche of the Nigerian people like a cankerworm. Repeatedly disappointed by the extravagant promises and unfulfilled expectation, Nigerians became cynical about government and the public morality of its agents and agencies. It is against this backdrop that I pronounced the pledge that the funds to be administered by the Board will be utilised prudently and for the purpose for which they are earmarked (PTF, 1995a: 19).

The PTF was thus perceived as a new approach to public sector project implementation to eliminate the problems of bureaucracy, corruption and excessive project cost and time overruns which, according to Oma-Williams (1991: 6) and Odeyinka & Yusif (1999) are endemic in Nigeria. Perhaps because it was the largest ever public works programme in Nigeria, the PTF programme generated a lot of

controversies, while its protagonists hailed it as a panacea for Nigeria's socio-economic problems. Its critics denounced it as an unnecessary duplication and/or usurpation of the functions of existing government ministries and a waste of public funds. The arguments on both sides of the divide were rather emotional, subjective and political and not based on any scientific assessment of the programme.

Because the present democratic government in the year 2000 has since scrapped the PTF, the general belief now is that it was a failure. The performance evaluation of the PTF's rehabilitation of educational and health institutions in North West Nigeria is aimed at an objective assessment of the performance of the PTF programme. The North West zone was chosen because health and educational projects from the primary to the tertiary levels were executed in the zone.

2. The PTF programme

Over the past three decades Nigeria has experienced cycles of economic prosperity and adversity. The period of prosperity coincided with the oil boom of the 1970s when the world market price of crude oil, Nigeria's main foreign exchange earner, rose astronomically. During this period the Nigerian government invested massively in public infrastructure in areas such as schools, hospitals, roads, power plants, etc. The government's development strategy at that time emphasised the provision of new facilities with little attention to the maintenance of existing ones and the future maintenance of new ones.

The result of the present economic collapse which started in 1981 is that very few new facilities have been added to the existing stock, which has been left to decay over the years due to lack of maintenance. Thus a point was reached in 1993 when it became clear to the government that if drastic measures were not taken not only would new public infrastructure not be built, but existing ones would also grind to a halt (Buhari, 1998: 12) It is against this background that the government decided in 1994 to remove the subsidy on petroleum products to establish PTF. The pump price of premium petrol, for instance, was raised from ₦0,70 to ₦11,00. The PTF was established to utilise some of the extra income accruing to the government from the petroleum price hike to rehabilitate the nation's dilapidated infrastructure.

2.1 Programme scope

Decree No 25 of 1994 (as amended by Decree No 1 of 1995), which established the PTF, specified seven areas for intervention by the Fund.

These areas were:

- Roads, road transport and waterways
- Health
- Education
- Water supply
- Food supply
- Security services
- Other projects.

For its intervention in these sectors, the PTF adopted a policy that focused on the following:

- Rehabilitation of existing facilities
- Establishment of facilities management systems for the maintenance and sustenance of rehabilitated facilities
- Institutional strengthening and capacity building of the beneficiaries/supervising agencies to enhance their capacity to operate and maintain rehabilitated facilities and carry out future expansions.

2.2 Programme structure and organisation

The PTF operated a zonal structure based on the six geopolitical zones of the country, namely the South West, South East, North West, North East, Middle Belt and South-South zones.

The PTF appointed the Afri-Projects Consortium as the management consultant for its projects nationwide. Under them Zonal Project Management Consultants (ZPMCs) were appointed for each of the six zones and under the ZPMCs project consultants (PCs) were appointed for each of the projects for architectural, quantity surveying and engineering services. Contractors dealt directly with the PCs. *Figure 1* shows the programme structure and organisation.

2.3 Selection of beneficiaries and projects

The PTF's National Health and Educational Institutions Rehabilitation Programme (NHERP) involved educational and health institutions from the primary to the tertiary levels. Selected for rehabilitation were:

- All federal universities, polytechnics, colleges of education and secondary schools
- Two primary schools in each of the 774 local council areas

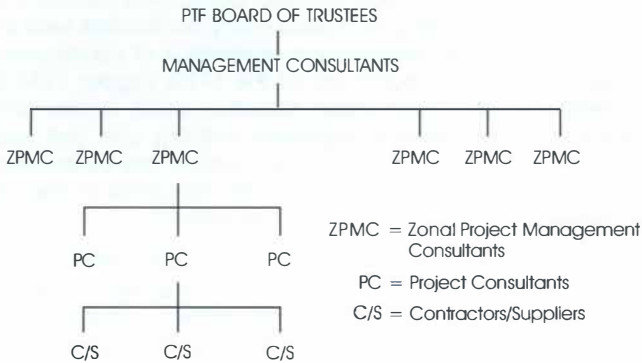


Figure 1: Organisation structure of the PTF Programme (Achinivu 1998:3)

- One state secondary school and one state vocational school in each of the 109 senatorial districts
- One state university or polytechnic or college of education in each of the 36 states
- One primary/comprehensive health centre per local council area
- One general hospital per senatorial district
- All federal specialist hospitals and university teaching hospitals
- Selected state specialist hospitals.

State and local government officials used PTF's guidelines to select the institutions to be rehabilitated.

2.4 Selection of contractors and contractual arrangements

The Project Implementation Committee (PIC) of PTF selected contractors on behalf of the Board of Trustees. The selection criteria were contained in PTF's Guidelines for the Selection of Contractors and Suppliers (PTF, 1995b: 1-6). The PIC adopted the selective tendering method, which is commonly used in Nigeria and elsewhere (Holt *et al.*, 1995: 555; Yusif & Odeyinka, 2000: 5).

The PTF saw its massive investment in construction as an opportunity to build capacity in the local construction industry, generate employment and alleviate poverty. Hence most of the contractors employed nationwide were indigenous. The PTF also applied the principle of "Federal

Character" (Affirmative Action) to select contractors from all the geopolitical zones of the country. As a result many contractors were employed who had little or no knowledge and experience of construction, as was the case during the oil boom era of the 1970s (Ngoka, 1974: 253-256). The Federation of Construction Industry, which is the professional organisation of government-registered building and civil engineering contractors in Nigeria, did not register many of the contractors. For the rehabilitation of educational and health institutions in the North West zone, a total of 574 contractors were employed.

The contracts were awarded on a firm price basis based on the Federal Ministry of Works Conditions of Contract for Lump Sum Contracts (similar to JCT'80, Private with Quantities). The normal contract procedure of bargaining between client and contractor to arrive at the contract sum was not used. The PTF simply used their own rates, which they called "harmonised" rates to determine contract sums, which contractors had to accept. According to the PTF, to arrive at the harmonised rates it adopted a pricing strategy that limited allowances for profit and overheads to no more than 20% of the basic cost (to the contractors) of executing the project. This was at a time when the minimum allowance for most government projects was about 45% (PTF 1998:7). The contract provided for an advance payment of 60% of the contract sum to the contractor (locally called a 'mobilisation' fee) subject to a performance bond guaranteed by reputable banks and insurance companies. There was also provision for interim monthly certificates to the contractors. These were processed through the Project Consultants, Zonal Project Management Consultants and the Management Consultants to the PTF for payment (*Figure 1*).

3. Programme execution

The execution of the PTF programme started nationwide in 1995. By January 1998 the PTF had made a total financial commitment of ₦132 012b (about US\$1 32b) to its projects. The programme period under review was from February 1998 to August 1999. This was perhaps the most unstable period in Nigeria's post-civil war history. The project environment was characterised by:

- Political instability resulting from the struggles against the military dictatorship
- Acute shortage of construction inputs, including fuel, spare parts for plant and equipment, construction materials, etc
- Inflation growing at about 10% per annum
- Economic, political and diplomatic sanctions against the country.

The execution of projects under the National Health and Educational Institutions Rehabilitation Programme in the North West zone commenced with 300 contracts awarded in February 1998. *Table 1* gives details of these contracts. The second batch of 298 contracts detailed in *Table 2* was awarded in December 1998.

Table 1: First batch of contracts awarded (North West Zone)

Project	Number of lots	Contract sum (₦)*
Primary schools	149	440 364 098,75
Federal government colleges	44	241 424 064,00
Federal universities	17	372 745 313,70
General hospitals	90	542 313 942,80
Total	300	1 596 847 401,25

* ₦ 120 is about US\$1

Source: Norwest Consultants (1999:2)

Table 2: Second batch of contracts awarded (North West Zone)

Project	Number of lots	Contract sum (₦)
Primary schools	53	176 390 398,00
State secondary schools	12	79 041 199,27
Primary/comprehensive health centres	121	151 397 168,40
Tertiary/specialist hospitals	52	711 385 178,17
Federal polytechnics	14	145 295 744,81
Federal/State colleges of education	46	345 674 686,41
Total	298	1 609 184 375,06

* ₦ 120 is about US\$1

Source: Norwest Consultants (1999:2)

The total contract values for projects in each state are shown in *Table 3(a, b & c)*. These values range from ₦174 582 884,78 (about US\$1 745 828) for Kebbi State to ₦823 316 548,85 (about US\$8 233 165) for Kano State. *Table 3(a, b & c)* also gives the breakdown of the contract values for the various project types, i.e. for primary schools, general hospitals, etc. They range from ₦79 041 199,27 (about US\$790 411) for state secondary schools to ₦711 385 178,17 (about US\$7 113 851) for tertiary/specialist hospitals.

Table 3a: Financial commitment per state and project type, (₦)*
(North West Zone)

State	Jigawa	Kaduna	Kano
Primary schools	-	-	221 394 093,55
Federal government colleges	37 383 531,28	40 790 295,00	39 306 927,00
Federal/State colleges of educ.	25 730 695,18	80 443 899,98	96 044 217,16
State secondary schools	-	-	-
Federal polytechnics	-	118 946 744,11	-
Federal universities	-	188 720 012,37	98 165 883,16
Primary/comprehensive health centres	-	-	-
General hospitals	85 770 247,18	117 640 736,61	125 502 202,96
Tertiary/specialist hospitals	35 715 828,09	197 151 371,04	242 903 225,03
Total	184 600 301,73	743 693 059,11	823 316 548,86

* ₦120 is about US\$1

Source: Norwest Consultants (1999:19)

Table 3b: Financial commitment per state and project type, (₦)*
(North West Zone)

State	Katsina	Kebbi	Sokoto/Zamfara
Primary schools	176 390 389,00	-	218 970 005,20
Federal government colleges	40 181 564,00	30 492 680,00	44 863 254,00
Federal/State colleges of educ.	68 334 581,47	26 337 560,23	48 783 732,39
State secondary schools	79 041 199,27	-	-
Federal polytechnics	-	-	26 349 000,70
Federal universities	-	-	84 916 584,24
Primary/comprehensive health centres	151 397 168,40	-	-
General hospitals	99 991 302,96	81 983 046,45	126 472 597,04
Tertiary/specialist hospitals	70 335 670,95	35 769 378,10	129 509 704,96
Total	685 671 876,05	174 582 664,78	697 864 878,53

* ₦120 is about US\$1

Source: Norwest Consultants (1999:19)

Table 3c: Total financial commitment per state and project type, (₦)*
(North West Zone)

State	Total
Primary schools	616 754 487,75
Federal government colleges	233 018 251,28
Federal/State colleges of educ.	345 674 686,41
State secondary schools	79 041 199,27
Federal polytechnics	118 946 744,11
Federal universities	371 802 443,77
Primary/comprehensive health centres	151 397 168,40
General hospitals	637 360 133,20
Tertiary/specialist hospitals	711 385 178,17
Total	3 291 729 329,08

* ₦120 is about US\$1

Source: Norwest Consultants (1999:19)

The work for each institution was broken down into lots like civil works, electrical works, roads, telecommunications, new buildings, etc. In all a total of 598 contracts were awarded to 574 contractors as shown in *Table 4*. The first batch of contracts work, started on site in March 1998. It should have been completed by December 1998. The second batch work started in December 1998 to be completed by August 1999. The contract periods ranged from 2 to 8 months and 1 to 8 months for the first and second batches respectively.

Following the threat by the two presidential candidates during the electoral campaign of early 1999 to scrap the PTF, work ground to a halt on most sites across the country. This was because contractors, from their experience of previous changes in government, were unsure if the new democratic government, which would emerge from the elections, would pay their outstanding certificates.

Table 4: Distribution of contracts among project types (North West Zone)

Project type	Number of institutions	Number of contracts
Primary schools	178	202
State secondary schools	3	12
Federal government colleges	12	44
Colleges of education	11	46
Federal polytechnics	2	14
Federal universities	3	17
Primary/Comprehensive health centres	28	121
General hospitals	18	90
Tertiary/Specialist hospitals	11	52
Total	266	598

Source: Norwest Consultants (1999:2-14)

4. Performance evaluation

"Performance" means meeting all agreed project requirements. In this sense performance is the same as "total quality", which means satisfying all the requirements of the project promoter/beneficiary in the economic as well as the functional sense (O'Neill, 1989: 175).

Historically project performance has been evaluated in terms of cost, time and quality. Thus, according to Maloney (1990: 402) and Walker (1995: 263), a project is considered successful if it is completed on time, within budget (initial contract sum) and to the required quality standards. For each of these criteria (time, cost and quality) performance is measured by comparing actual results with the optimum or planned results. The performance analysis for this study goes beyond the three general criteria of cost, time and quality to include other objectives contained in the PTF's mission statement and operational philosophy.

The method of analysis used in this study is a modified form of Earned Value Analysis (EVA). EVA is normally used to track the progress of a project from inception to completion (Smith, 1995: 179). It is a variance analysis method, which quantifies the deviation of measures of actual performance from a standard (Kim & Ballard, 2002: 56).

The data required for EVA are in three measures, namely, Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP) and Actual Cost of Work Performed (ACWP). These are defined as follows:

Budgeted Cost of Work Scheduled (BCWS) is the value of work that should have been done by a given point in time (Smith, 1995: 171). It is the budgeted value, usually in monetary terms or man-hours, of work to be done in a given period of time.

Budgeted Cost of Work Performed (BCWP) is also known as the Earned Value. It is the budgeted value of the work actually done in a given period of time expressed in monetary terms or man-hours (Kim & Ballard, 2002: 56).

Actual Cost of Work Performed (ACWP) is the actual cost incurred in monetary terms or man-hours of work done in a given period of time (Kim & Ballard, 2002: 56).

Variance used in EVA is usually divided into two indices, namely Cost Variance (CV) and Schedule Variance (SV). Cost Variance (CV) is the difference between the budgeted cost and the actual cost of the work done. That is, $CV = BCWP - ACWP$.

Schedule Variance (SV) is the difference between the budgeted cost of work actually done and the budgeted cost of the work to be done. That is, $SV = BCWP - BCWS$. These variances are interpreted as shown in *Table 5*.

Table 5: Variance analysis in EVA

Variance	-	0	+
Cost Variance (CV)	Cost overrun	On budget	Under budget
Scheduled Variance (SV)	Time overrun	On schedule	Ahead of schedule

Source: Kim & Ballard (2002:57)

In addition, two performance concepts are obtained from O'Neill (1989:194) as follows:

- Time Performance Index (TPI) is the ratio of the budgeted cost of work performed to the budgeted cost of work scheduled. That is, $TPI = BCWP/BCWS$.
- Performance Index (CPI) is the ratio of the budgeted cost of work performed to the actual cost of work performed. That is, $CPI = BCWP/ACWP$. These indices are interpreted as shown in *Table 6*.

Table 6: Performance indices in EVA

Index	<1	1	>1
Time Performance Index (TPI)	Time overrun	On schedule	Ahead of schedule
Cost Performance Index (CPI)	Cost overrun	On budget	Under budget

Source: Compiled by authors

The analysis is a sort of post-mortem, which only evaluates the status of the project at the end of the contract period with respect to the cost, time, quality and other objectives. Such post-mortem evaluations are obviously far too late to be of benefit to a completed project. However, in this case where most of the projects were not completed by the end of the contract period, the evaluation can be useful in pointing out mistakes to be avoided when trying to complete the projects or executing future projects (Lock, 1996: 497). Data for the analysis were collected from the PTF and the project consultants.

4.1 Cost evaluation

A major aim of a client in promoting a project is to procure the required facilities at minimum cost within his budget (Chappell, 1991: 14-20). This requirement has become very critical for the governments of most developing countries, including Nigeria, where public funds have been dwindling over many years of economic decline.

Cost efficiency was particularly important to the PTF, which set out to overcome the stigma of endemic cost overruns, which Oma-Williams (1991:6) has put conservatively at an average of 140% of project cost in Nigeria. By adopting its unorthodox "harmonised pricing" contract method, the PTF claimed to have made ₦30 65b (about US\$0 26b) in cost savings for the entire programme between 1995 and 1998. For the educational and health institutions projects in the North West zone, firm price contracts were used, with contractors given up to 60% of the contract sums as a sort of "firm price allowance" to cushion the effects of inflation.

The PTF adopted very strict procedures for the issuance and approval of variation orders to discourage variations. In the very few cases in which variations were allowed the contingency sums were enough to cover the extra costs. Thus the cost performance index (CPI) for the educational and health institutions projects in North West Nigeria was practically 1 as no cost overrun was recorded. This also implies $CV = 0$ and there was no extra cost to the client over and above the agreed contract sums.

4.2 Time evaluation

Most construction contracts are signed with a definite contract period stipulated, and the extent to which this target is met is a measure of project success. A project that is completed late can be damaging to both the client and the contractor. For this reason, time is one of the most critical factors that must be controlled in a project.

Many things may occur on a construction site to delay the completion of the entire project or any given activity. Odeyinka and Yusif (1997: 31) have shown that the causes of construction delays can be nested in four layers, namely, client-caused delay, contractor-caused delay, extra-contractual delay and consultant-caused delay. According to Ogunlana and Olomolaiye (1989: 191-196) contractors handling projects in developing countries face three major problems that cause delay. First is the problem imposed by the construction industry's infrastructure, such as training of personnel, availability of plant and building materials. The second is that of inaccurate information and frequent changes in instructions and failure by clients and consultants to meet their obligations. The third is imposed by the contractor's own shortcomings.

In Nigeria contractors usually use materials shortage as an excuse for project delay (Okpala & Aniekwu, 1988: 242) and clients' failure to pay contractors on time is a major cause of delay (Dlakwa & Culpin, 1990: 237). It has also been established by Ngoka (1974: 253-256), Ogunlana and Olomolaiye (1989: 191-96), and Wahab (1977: 81, 88) that most projects suffer time overruns because many Nigerian contractors lack the requisite resources and expertise and are in the business of making money at the expense of good management.

As a deliberate policy, the PTF divided its projects into small work packages to enable as many contractors as possible to participate in the programme and to minimise the contract periods. Hence the projects under review had very short durations ranging from 1 to 8 months. This was with a view to minimising time overruns by awarding small work packages, which the mostly local contractors employed could execute efficiently and effectively.

For the analysis, the period used is the contract period. By comparing BCWP and BCWS at the end of the contract period the TPs are calculated in *Tables 7-12* and interpreted as in *Table 6*.

Table 7: Time performance of Jigawa state projects

Project type	BCWS (₦)	BCWP (₦)	**TPI = BCWP/BCWS
Federal government colleges	37 383 531,28	34 579 766,43	0,92
Colleges of education	25 730 695,18	7 075 941,17	0,27
General hospitals	85 770 247,18	80 538 262,10	0,94
Tertiary/Specialist hospitals	35 715 828,09	23 215 288,26	0,65
State total	184 600 301,73	145 409 257,96	0,79

** TPI (Time Performance Index)

Source: Norwest Consultants (1999:2-14)

Table 8: Time performance of Kaduna state projects

Project type	BCWS (₦)	BCWP (₦)	**TPI = BCWP/BCWS
Federal government colleges	40 790 295,00	36 956 007,27	0,91
Colleges of education	80 443 899,98	22 685 179,79	0,28
Federal polytechnics	118 946 744,11	38 657 691,84	0,33
Federal universities	188 720 012,37	160 034 570,49	0,85
General hospitals	117 640 736,61	108 817 681,36	0,92
Tertiary/Specialist hospitals	197 151 371,04	41 204 636,55	0,21
State total	743 693 059,11	408 355 767,30	0,55

** TPI (Time Performance Index)

Source: Norwest Consultants (1999:2-14)

Table 9: Time performance of Kano state projects

Project type	BCWS (₦)	BCWP (₦)	**TPI = BCWP/BCWS
Primary schools	221 394 093,55	219 932 892,53	0,99
Federal government colleges	39 306 972,00	32,467 521,70	0,83
Colleges of education	96 044 217,16	54 264 982,70	0,57
Federal universities	98 165 883,16	89 330 953,68	0,91
General hospitals	125 502 202,98	122 615 652,31	0,98
Tertiary/Specialist hospitals	242 903 225,03	63 154 838,51	0,26
State total	823 316 548,88	581 766 841,43	0,71

** TPI (Time Performance Index)

Source: Norwest Consultants (1999:2-14)

Table 10: Time performance of Katsina state projects

Project type	BCWS (₦)	BCWP (₦)	**TPI = BCWP/BCWS
Primary schools	176 390 389,00	106 010 623,79	0,60
Federal government colleges	40 181 564,00	37 328 672,96	0,93
Colleges of education	68 334 581,47	36 285 662,76	0,53
State secondary schools	79 041 199,27	16 993 857,84	0,21
Primary/Comprehensive health centres	151 397 168,40	38 000 689,27	0,25
General hospitals	99 991 302,96	75 393 442,43	0,75
Tertiary/Specialist hospitals	70 335 670,95	9 706 322,59	0,14
State total	685 671 876,05	320 719 271,64	0,47

** TPI (Time Performance Index)

Source: Norwest Consultants (1999:2-14)

Table 11: Time performance of Kebbi state projects

Project type	BCWS (₦)	BCWP (₦)	**TPI = BCWP/BCWS
Federal government colleges	30 492 680,00	29 486 421,56	0,97
Colleges of education	26 337 560,23	6 321 014,46	0,24
General hospitals	81 983 046,45	78 457 775,45	0,96
Tertiary/Specialist hospitals	35 769 378,10	26 827 033,58	0,75
State total	174 582 664,78	141 092 245,05	0,81

** TPI (Time Performance Index)

Source: Norwest Consultants (1999:2-14)

The closer the TPI is to unity the better the time performance. Thus from *Tables 7 to 12* the best project type performance was in Primary Schools in Kano State (TPI = 0,99) and the worst was in Federal Polytechnics in Sokoto/Zamfara (TPI = 0,00). This means that the programme completed 99% of the value of work for primary schools in Kano State and 0% for Federal Polytechnics in Sokoto/Zamfara State by the end of the contract period.

The best state in time performance was Kebbi (overall TPI for all projects = 0,81) and the worst was Katsina with overall TPI = 0,47. This means 81% of the value of all the projects in Kebbi and 47% in Katsina were completed by the end of the contract period (*Table 13*).

Table 12: Time performance of Sokoto/Zamfara state projects

Project type	BCWS (₦)	BCWP (₦)	**TPI = BCWP/BCWS
Primary schools	218 970 005,20	171 453 514,07	0,78
Federal government colleges	44 863 254,00	38 268 355,66	0,85
Colleges of education	48 783 732,39	19 513 492,96	0,40
Federal polytechnics	26 349 000,70	0,00	0,00
Federal universities	84 916 584,24	74 302 011,21	0,88
General hospitals	126 472 597,04	107 375 234,89	0,85
Tertiary/Specialist hospitals	129 509 704,96	16 188 713,12	0,13
State total	679 864 878,53	427 101 321,91	0,63

** TPI (Time Performance Index)

Source: Norwest Consultants (1999:2-14)

Table 13: Time performance of the PTF programme in the North West Zone

Project type	BCWS (₦)	BCWP (₦)	**TPI = BCWP/BCWS
Jigawa	184 600 301,73	145 409 257,96	0,79
Kaduna	743 693 059,11	408 355 767,30	0,55
Kano	823 316 548,88	581 766 841,43	0,71
Katsina	685 671 876,05	320 719 271,64	0,47
Kebbi	174 582 664,78	141 092 245,05	0,81
Sokoto/Zamfara	679 864 878,53	427 101 321,91	0,63
Total for North West Zone	3 291 729 329,08	2 024 444 705,29	0,62

Source: Norwest Consultants (1999:2-14)

From *Table 13* the overall TPI for the PTF programme for health and educational facilities in the North West Zone was 0,62. This means that the programme achieved 62% of the value of its projects by the end of the programme period. Thus by the end of the contract periods for its projects the programme had suffered a time overrun.

The time overrun or schedule variance (SV) is calculated as

$$SV = \frac{BCWP - BCWS}{BCWS} \times 100\% = \frac{2\,024\,444\,705,29 - 3\,291\,729\,329,08}{3\,291\,729\,329,08} \times 100 = -38,5\%$$

From *Table 5*, this figure represents a time-overrun equal to 38,5% of the original (planned) programme duration. This means that if the general level of performance did not change, the project durations for the

programme would be extended by 38,5% to complete the projects. Most of the of the projects are likely to perform worse than this average figure if they are ever completed, as three years after the original contract periods they are yet to be completed. Many may end up swelling the large number of abandoned projects already littering the nation's landscape.

Of the 598 contracts executed under the programme in the North West zone 434 (72,6%) suffered delay. One hundred and five (105) of the contracts (17,56%) achieved zero completion by the end of the contract period. The consultants throughout the contract period could not locate Fourteen (14) contractors who collected the 60% advance payment.

It is not surprising that Katsina had the worst performance, as all 14 contractors who could not be located by the consultants were employed in the state and 37 of the projects in the state, were at zero completion by the end of their contract periods .On the other hand, Kebbi had only four projects at zero completion by the end of their contract periods and all contractors employed for the state took possession of their sites. Only 126 of the 336 educational projects (37,5%) and 51 of the 262 health projects (19,5%) in the zone were completed on schedule. Overall, the programme achieved only 27,3% completion of its projects on schedule in the North West Zone.

4.3 Quality evaluation

Quality, according to Maloney (1990: 400), involves doing things the right way the first time. The work done must conform to the specifications agreed on for the project. Quality performance is thus measured by the extent to which the completed work possesses the attributes desired by the client and the designer. Poor quality performance results in increased rework, which may lead to time and cost overruns.

The quality of work done was generally good. According to the consultants' reports (Norwest, 1999: 1-3) in only 29 (4,8%) of the 598 contracts were defects found during construction and during the defects liability period. In only 2 (0,33%) of the contracts was the quality of work found to be totally unacceptable. This is rather strange as many of the contractors lacked the experience and the expertise for construction. Perhaps the contractors were able to achieve good quality because of the simplicity of the projects. Most of the work involved the renovation of very simple single storey buildings, which required neither the highly skilled labour nor the plant and equipment which most of the local contractors lack.

5. The roles of the project participants

The participants directly involved in a construction project include clients, consultants and contractors. Seeley (1997: 137-144) has discussed the roles of these participants in the administration of construction projects. Hillebrandt (1985: 10-23) and Seeley (1997: 10) have also stressed the roles of indirect participants such as government and its agencies and manufacturers. The performance of these participants in their respective roles determines to a large extent the success or failure of a project.

It can be seen from the performance evaluation that the programme under review was successful in terms of cost and product quality. In terms of time, however, the programme performed below expectation. Responsibility for this failure can be attributed to all the three major participants – the client, the contractor and the consultants. PTF (the client) failed to meet its financial obligations to both the contractors and the consultants. The major reason contractors gave for project delay was the contractors' cash flow problems resulting from unpaid certificates.

The PTF's financial problems stemmed from the government's failure to fulfil its commitments to the Fund. For instance, between 1995 and 1998, out of a total commitment of ₦198 25b (about US\$1 65b) the government allocated only ₦109 822b (about US\$0 91b) to PTF. This represents a shortfall of 44,6%. PTF's financial problems worsened when the government widened the scope of the programme to include many more areas of intervention despite the reduced allocation to the Fund (PTF, 1998:3)

Many contractors performed below expectation because they lacked the expertise and the capital and equipment base required for the business of construction. Some of them came into construction for the first time to take advantage of the 60% advance payment offered by PTF. Some completed well below 60% of the contract value and abandoned their sites after collecting 60% of the contract sum as advance payment. The project consultants (PCs) had no representatives on site. This was because the client refused to pay for it. Hence the only contact between the contractor and the PCs was during the monthly site meetings. Furthermore, the sites were scattered all over the states in places with no telecommunications links with the state capital where the PCs were based. This delayed consultants' instructions to contractors and the contractors' compliance. The consultants also suffered a serious financial crisis for about six months of the period under review when the PTF failed to pay them their fees. During this period, the monthly progress reports of the consultants were produced two to three months behind schedule.

The programme organisation (*Figure 1*) was rather bureaucratic as contractors had to process their certificates through the PCs, ZPMCs and the Management Consultants to the client. This was a major cause of delay in paying contractors. The PTF programme commenced in 1995 but it was only in 1998 that a decision was taken to establish an independent Project Monitoring and Evaluation Unit (PMEU). By the time PMEU became fully operational in 1999, the PTF programme had ground to a halt as a result of the decision by the new democratic government to scrap the Fund. A major innovation in the PTF programme was the policy of establishing a facilities management system for each rehabilitated institution. This was never implemented.

PTF was scrapped in the year 2000 and replaced with a caretaker body to complete its projects. Unfortunately, most of the delayed projects have remained uncompleted to date and have joined the large stock of abandoned projects, which litter Nigeria's landscape.

6. Conclusion

The study has shown that the PTF programme was successful in terms of cost and quality. However, the cost performance is deceptive because most of the projects have been abandoned since 1999. If they were to be completed today at current prices the cost overrun could exceed the average figure of 140% quoted for Nigeria. The huge sums of money tied down by these uncompleted projects are a colossal waste. The project performed below expectation in terms of completion time. At the end of the scheduled completion period the projects had suffered a time overrun of 38,5% on average. The longest project completion period for the programme was 8 months. Thus, if the projects were to be completed today, four years behind schedule, the time overrun would be over 400%.

The unsatisfactory time performance can be attributed to both internal and external causes. The internal cause was the failure of the major project participants, especially the client and the contractors, to discharge their responsibilities. The client failed to pay the mostly local, small-scale contractors with very little working capital as and when due. Most of the contractors lacked the basic resources required for the business of construction. The major external cause was the political instability, which the nation suffered during the programme period. Most contractors abandoned their sites because from their experience of previous changes of government in Nigeria, they were not sure if the incoming civilian government would honour contracts entered into by the outgoing military dictatorship. To date, (three years after the programme was scrapped) many contractors and consultants are yet to be paid

for the work done.

An important lesson from the PTF programme is that, in addition to public need, availability of funds should be a major criterion for embarking on government projects. In an attempt to please everybody the PTF embarked on too many projects at the same time (for purely political reasons) with no guarantee of adequate funding from the government. The result is that most of the projects remain uncompleted to date and the fundamental element of distrust in public accountability, which the PTF set out to remove, has been further entrenched instead.

It is recommended that:

- The programme must be evaluated in the other five zones so that the results can be aggregated to give the PTF programme a national performance rating
- The completion cost for all the uncompleted projects should be assessed to know the financial requirements for their completion
- As a deliberate government policy all the uncompleted PTF and other public projects should be completed before any new projects are initiated. This is the only way the huge financial investments in these projects can be recovered in the public interest. The government should set a time frame for the completion of all such projects
- The government should invest in local capacity building in the Nigerian construction industry as a long-term policy to address the problem of low productivity of indigenous contractors. Most of the indigenous contractors engaged in the PTF programme performed far below expectation because (as other studies have shown) they lacked the expertise, financial resources and equipment base required for present-day construction.

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