

# THE STATE-OF- THE-ART OF INFRASTRUCTURAL MAINTENANCE IN EDO AND DELTA STATES OF NIGERIA: THE SERVICE PROVIDER'S VIEW POINT

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## **Abstract**

This paper is an attempt to carry out a survey of some of the infrastructural maintenance practices prevalent in Edo and Delta States of Nigeria. Research such as this is timely due to observed general infrastructural decay in the country. To carry out this study, a validated questionnaire was used. 186 service providers (chief executives, engineers, and operatives) from the public and the private sectors of each state were proportionately sampled from a population of 2856. The result showed that only 18.6 % of the respondents agree that their establishments practise regular schedule of maintenance; 57.5% agree theirs carry out maintenance only when there is a major breakdown and 17.5 % agree that theirs do not maintain at all. On budgeting, 29% of the respondents agree that their establishments budget for maintenance; 56.5% agree that fund is only released when there is a clear breakdown. On the reason for poor facility maintenance, 57.6% of the respondents agreed that lack of fund was the major factor and 35.5% felt it is general lack of the 'will' to maintain. Generally, 50% of the respondents were not satisfied with the maintenance culture prevalent in the country while 38.7% felt satisfied and 11.3% were undecided. To ensure a turnaround of the present trend, organizations should budget for maintenance, make detailed maintenance plan in advance, make provision for maintenance in the design of new facilities and above all the people should have a mindset change towards the present state of maintenance in the country.

## **Introduction**

Any constructed facility can be considered an asset or an investment. As soon as the facility is commissioned, usage, decay, and aging start to take their toll, and there will be the need to maintain and renovate the erring facility to ensure its optimal value over the designed life. According to Wheeler (1985), maintenance is the intention to keep things in good up-keep for the purpose of obtaining maximum usefulness and at acceptable cost. The definition however, excluded those cases where maintenance meant a complete replacement of the original facility. It however, includes those cases where maintenance was built into the solution right from inception. Preventive maintenance should be taken as the meaning implied in the definition. On the other hand, breakdown maintenance as the name implies is defined as the conscious or unconscious intention to deal with failures and deteriorations in a facility only when they arise. In building systems, failure can be an outright collapse or displacement of a roofing system or bursting of an effluent discharge pipe or shrinkage cracks on a wall plaster. According to British Standard; (BS 381 1), maintenance is the combination of all technical and administrative actions intended to retain an item in, or restore it to, a state in which it can perform its required function. Thus, all faulty parts of a facility need regular maintenance to ensure they continue to function properly, and retain their value and appearance. In Nigeria, the fact that the development planners are more interested in building new facilities all the time and fall behind in their up-keep came to lime-tight in the fifth National Development Plan.

According to Alutu (2000), inspection of build facilities and their maintenance are neglected until major breakdowns clearly occur; consultants are rushed to carry out detailed inspection and contractors are hired to effect repairs. In that state of affairs, the facilities deteriorate and no longer retain their value and appearance or perform their intended functions. A number of factors are blamed for this state of affairs: lack of funds, lack of equipment, lack of trained maintenance personnel, lack of the 'will' to maintain. However, the people who are directly involved with maintenance need to be approached i.e. the chief executives, engineers and operatives of government and private establishments to determine the true slate of affairs. The purpose of this paper therefore is to determine the state -of-the -art of infrastructural

maintenance in Edo and Delta States of Nigeria from the service providers. The service providers are defined as the chief executives, engineers, and

operatives who are directly involved with maintenance operations in the two States e.g. Federal, State and Local Government and private company establishments-in the study will therefore attempt answering some questions on why maintenance of infrastructure in Nigeria is neglected until a clear breakdown occurs. It would also suggest ways of ameliorating the situation.

The questions raised by the study are:

- (1) How is maintenance practised in the service provider's establishments?
- (2) How is fund released for maintenance purposes in the service provider's establishments?;
- (3) What are the service provider's funding preferences: new projects or the maintenance of old ones or both?
- (4) What are the major causes of poor maintenance of facilities in Nigeria in the service provider's view?
- (5) Are service providers satisfied with the level of maintenance culture in Nigeria?

### **Methodology**

This study was carried out in Edo and Delta States of Nigeria. The total population of the service providers (chief executives, engineers, and operatives) in the federal and state establishments, local government councils and major private sector establishments in the two states were estimated to be 2856. This population comprised of 952 registered engineers, 240 chief executives, and 1664 operatives. According to Gay (1987), a sample of ten per cent (10%) of the entire population (if well selected) can be said to be representative of the desired population. Hence, based on Gay's formula, the required sample size assuming 4.5% accuracy or standard error in estimating the sample size is calculated to be 161. say 186. Thus, 186 service providers were proportionately sampled from the three strata (chief executives, engineers, and operatives) and used for the study. A validated questionnaire was used for data collection, which had section A (Bio data), section B (infrastructural maintenance problems). Questions were predetermined for the items and the respondents were to tick the applicable option. However, respondents were given room to specify their own answers where they were different from the options given. The number of respondents giving same response was collated and percentages were tabulated.

ResultsThe results are given in Tables I to 7 and they show the numbers and the percentages of tota number of respondents that responded to a particular item.

Table 1: Respondents View on the Present Maintenance Practise in Establishments

Service Provider's Response	NO	%
Maintenance is scheduled at regular interval	34	18.6
Maintenance is done only when there is major breakdown	107	77.5
Maintenance is done only when there is fund	12	6.22
Maintenance is not done at all	33	17.6
	n = 186	100%

Table 2: Respondent's View oil How Release of Fund for Maintenance Purposes is Practised Service

Provider's Response	NO	%
Constant amount but budgeted for	54	29
Only when there is breakdown	105	56.5
Irregular release of fund	27	14.5

Table 3: Service Provitler's Project Funding Preferences

Service Provider's Response	NO	%
Prefer to build new projects.	58	32
Prefer to maintain completed projects	62	33
Prefer allocation to cover new and old projects	66	35

n= 186 100%

Table 4: Respondent's Choice of the Factors Responsible for Poor Maintenance in Nigeria Service

Provider's Response	NO	%
Lack of equipment	3	1.6
Lack of fund	96	51.6
Lack of both equipment and fund	21	11.3
Lack of the 'will' to maintain	66	35.5

n = 186 100%

Table 5: Respondent's Satisfaction with the State of Maintenance Culture in the Country Service-

Provider's Response	NO	%
Satisfied	72	38.7
Not satisfied	93	50
Undecided	21	11.3

n = 186 100%

Table 6: Respondent's View on Attendance to Refresher Courses/Conferences on Maintenance

Service Provider's Response	NO	%
I attended reference courses/conferences within last 2 years	37	20
I last attended refresher courses/conferences more than 2 years ago	149	80

n= 186 100%

Table 7- Respondent's View on the Need to Introduce Maintenance into University'Curriculum

Service Provider's Response	NO	%
It will not help to improve maintenance	7	3.5
Yes it should be introduced	124	66.86
It will be a waste of money and time	3	1.74
Undecided	52	27.91

n= 186 100%

## Discussion

On how maintenance operations are practiced in their establishments, 18.6% (n =36) of the respondent indicate that they have regular schedule of maintenance. 57.5% (n = 111) maintain only when there is major breakdown. 6.22% (n = 12) do theirs when fund is available and 17.6% (n= 34) have no defined practice. That 57.5% of the respondents practice breakdown maintenance policy is not a surprise. This confirms why our roads, bridges, buildings, telephones, water supply schemes are in a dilapidated state! Only 18.6% of the respondents practiced scheduled maintenance schemes. These are mostly private organizations who run specific businesses and who desire to be in business uninterrupted by the breakdown of their facilities.

On whether Maintenance Technology should be introduced into the curriculum, 3.5% (n = 6) of the respondents felt it is not practicable. 66.86% (n =115) felt that it is desirable to do

so in all disciplines 1.74% (n = 3) felt it is a waste of time and resources. While 27.91% (n = 48) were decided. That 66.86% sanctioned the inclusion of maintenance practice in the curriculum is an indication that the people are fed up with the shabby state of our infrastructure maintenance. According to Alutu (2000), facility maintenance in Nigeria is neglected until a major breakdown clearly occurs; then consultants are rushed to perform detailed structural inspection and assessment while contractors are hired to effect the necessary repairs. People desire facilities that work.

On how money should be released for maintenance in the establishments, 29% (n = 54) of the respondents, said specific amount which is budgeted for, is released on a monthly basis, 56.5% (n = 105) said money is released only when there is a breakdown, 14.5% (n = 27) said release of money is irregular and not defined. Only 29% practice budgeting for regular maintenance of their facilities. These are again mostly establishments owned by private concerns. The 56.5% that released money only when breakdown occurred are mostly public service concerns. The cost to any nation of responding to breakdown maintenance is of very high order indeed, it includes the cost of interruption as a result of serious damage before there has to be time to plan repairs and reconstruction. The Organization for Economic Co-operation and Development (OECD) road research report has put this cost at five times the cost of repairs. According to Wheeler (1985), one of the ways to achieve a satisfactory maintenance of any facility is the ability to pay for upkeep; best results are obtained only when upkeep is planned within the solution and budgeted for, on a regular basis. This helps to ensure that maintainers can respond quickly to maintenance needs.

On whether respondents should prefer to fund new projects or maintain old ones; 32% (n = 58) of the respondents prefer to fund new capital projects, 33% (n = 62) prefer maintaining the existing facilities while 35% (n = 66) prefer to share the funds between new projects and existing facilities' maintenance.

The ideal of maintaining old facilities or sharing the maintenance fund between new projects and old ones is in order. However, what causes concern is the concentration on new projects. This has been the order of the day in Nigeria up to the fifth National Development Plan period when it was first realized that the practice was wasteful, uneconomical and unprogressive. However, it was reported (Alutu 2000) that an average of 26% of the total annual highway expenditure (construction and maintenance) was spent on Nigeria's federal and Regional highways during the period 1958-1967. During the period 1975-1980, the figure has degenerated to 5%. This figure is very unsatisfactory. With the grinding economic depression in the country, the situation has not improved in the 80s and the 90s and even in this new millennium. It should be noted that some advanced countries such as United States of America, having seen the beneficial effect of operating preventive maintenance schemes, have devoted up to 50% of the total annual highway budget to inspection and maintenance.

On the factor that is responsible for poor physical facilities maintenance, 1.6% (n = 3) of the respondents blamed 'lack of maintenance equipments'; 51.6% (n = 96) blamed 'lack of funds'; 11.3% (n = 21) blamed lack of equipment and funds while 35.5% (n = 66) felt that Nigerian people lacked the will to maintain their facilities. Lack of fund is not as serious as lacking the discipline to maintain. Take for example the disposal of refuse: market places, public highways, squares and streets are sites for dumping refuse. Littering of cans, polythene bags, paper, etc has no control. This aspect must be what the respondents who felt that Nigerians lacked the will to maintain had in mind. As indicated earlier, a mindset change is necessary.

On whether refresher courses, conferences and seminars are organized for service providers, only 20% (n = 37) of the respondents have attended refresher courses or conferences in the past 2

years, while 80% have not been to conferences. It should be noted that through refresher courses, seminars and conferences the mindset of the service providers can be changed and more knowledge acquired for better performance. Training and retraining through short courses and conferences should be encouraged and given priority.

Finally, on whether the respondents are satisfied with the state of maintenance culture in the country at the moment, 38.7% (n = 72) felt satisfied, 50% (n = 93) were not satisfied and 11.3% (n = 21) felt indifferent. With 50% not satisfied together with the 11.3% that felt indifferent, it is clear that all is not well with the maintenance of our infrastructural facilities. The organization and management of maintenance of facilities in the country is unsatisfactory, and needed urgent overhaul.

## Conclusion

This paper has presented basic information on the maintenance of infrastructure as practiced by service providers in their various establishments in Edo and Delta States. Of the 186 service providers studied, 107 agree that their establishments practice breakdown maintenance. This is supported by the fact that almost the same number of respondents, that is 105 respondents agreed that fund is only released when there is a major breakdown. 96 of the service providers felt that lack of fund was the factor responsible for poor maintenance of facilities while 66 felt it is the 'lack of the will' to maintain instead. 93 respondents are not satisfied with the present state of maintenance of infrastructure in the country. These findings give cause for great concern, because if the present trend is not reversed, a point will be reached when the facilities will require replacement all at the same time. The cost of such an exercise will be incomprehensively large!

## Recommendations

The following recommendations are made:

- A national maintenance centre with emphasis on research, training and education in all aspects of maintenance should be set up. The recommended duties of the centre should be to ensure proper public awareness on the importance of maintenance through the media, bill boards, workshops, seminars conferences and public lectures. This will help to inculcate a proper mindset towards maintenance to the generality of the populace.
- The management of organizations should be made to have detailed maintenance plan in advance for all their facilities and equipment. This plan should include provision of information on the scheduled time for regular inspection, assessments of defects, determination of remedies, costing of repair works, and plans for releasing fund for the repairs and repair work itself.
- Organizations should budget for maintenance beyond the defect liability period for all facilities and as budget is made, efforts should be made to ensure proper implementation of the budgetary provision
- Maintenance technology should be included in the school curriculum of engineers, architects and technicians and taught at universities and polytechnics.
- For new projects maintenance should be built into the design solutions especially in detailing of works, and specification of materials and workmanship.

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