

ATTITUDE OF SERVICE PROVIDERS IN EDO AND DELTA STATES OF NIGERIA TOWARDS MAINTENANCE OF CIVIL ENGINEERING INFRASTRUCTURE

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Abstract

This study aimed at investigating some social factors affecting maintenance of Civil Engineering infrastructure with a view to synthesizing the implications of the finding for better future handling of maintenance operations. The design adopted for this study was ex-post facto. The population for this study comprised of all the service providers: engineers, chief executives, and operatives in public and private sectors of Edo and Delta states of Nigeria. This group of people were selected because they are directly concerned with the issue of maintenance of infrastructure in their establishments. A purposive sampling procedure was adopted to select 180 service providers (30- chief executive, 30 engineers and 30 operatives) from the public service and private sector respectively. A questionnaire. Attitudes to Maintenance of Infrastructure Scale (AMIS) was validated and used for data collection. The reliability co-efficient of the instrument was .80. The collected data were analyzed using the z-test statistics and one-way analysis of variance (ANOVA). The results showed that only 47% of the service providers were positively disposed to good maintenance practice while 53% were not.

Keys words: Attitude, Service-Providers, Maintenance, Nigeria.

Introduction

Attitude as define by Haber (1975) is predisposition to respond favorably or unfavorably to a more or less predictable degree to particular situations on the basis of ideas and feelings we bring to these situations. The implications of this definition are that: altitude is a predisposition to respond, not a response or behavior per se. Many of our attitudes are not acted on consistently; the response towards which an attitude predisposes us is more or less predictable. This means that attitudes are measurable. Some are stronger than others and of course the strongest ones are the ones most likely to lead to action. Rosenberg (1960) noted that all responses to stimulus object are mediated by an individual's attitude to that object. In effect attitude indicates how an individual is likely to behave. For instance, if a maintainer sees maintenance of infrastructural facilities as very essential to the wellbeing of his system, it will obviously influence his attitudes towards it favourable.

According to Anastasi (1976), the strength and direction of individual's interests, attitudes, motives and values represent an important aspect of his personality. Allporl (1961). conceived personality as comprising habits, specific and general attitudes and dispositions.

Most researchers in psychology and education agree that attitudes of individuals affect what they do. They also stated that a person's attitude determines the way he views life, sees himself or interacts with others. This means that if a service provider expresses positive attitude towards facility maintenance, it is very likely to affect his behavior towards facility maintenance. Thus, the knowledge of the importance of infrastructural maintenance may exist but the attitude of the service providers may jeopardize its application in practice. The dilapidated state of facilities in Nigeria due to lack of maintenance has been blamed on the policy inconsistency of government and lack of funds (Alutu, 2001). However, no one has thought that the behavior and altitudes of the service providers could equally be blamed. The attitudes of planners towards new projects Vis-a-vis the maintenance of the old ones is an example: In the past, planners recommended huge capital investments on new facilities but did not see the need for sufficient funding for their good up-keep (Alutu, 2000). This is an attitude problem. Fortunately, it has dawned on the Nigerian authorities that this policy is unprogressive, uneconomical and wasteful; this came to the limelight during Nigeria's Fifth National Development Plan (1985-1990). This realization notwithstanding, recent experience has shown that maintenance of infrastructural facilities is still a problem to be tackled and not to wait when

a breakdown has prevented their use. The maintenance service providers are those who implement the maintenance policy for any facility . They include the chief executives, engineers and operative

responsible for maintenance, employed by an establishment. The direction of their attitudes towards the maintenance policy of their establishments must influence the maintenance itself. The purpose of this paper is to investigate the attitudes of maintenance service providers towards infrastructural maintenance with a view to synthesizing the implications of the findings for better future handling of facilities' maintenance in Nigeria.

Research Hypotheses

The following hypotheses were tested in this study. With regard to attitudes of service providers towards maintenance of infrastructural facilities, there will be no significant differences between:

- a) Engineers in public and private services;
- b) Chief executives in public and private services;
- c) Operatives in public and private services;
- d) Chief executives who are engineers and those who are non-engineers;
- e) Engineers in public service, engineers in private service, and chief executives in public service, chief executive in private service, operatives in public service and operatives in private service.

Methodology

This study is a descriptive survey which adopted the ex-post facto design. The population of this study comprised service providers (chief executives, engineers and operatives) responsible for facility maintenance in both public and well-established private establishments in Edo and Delta States. A purposive sample of 180 service providers was selected from an estimated population of 2856. There are 30 chief executives, 30 engineers and 30 operatives sampled separately from private sector and the public services of each State.

To access attitude, the researcher used the maintenance of infrastructure's attitudes scale (AMIS). This questionnaire consists of 34 items, reconstructed for use in maintenance setting from a validated attitude to Exclusive Breast Feeding Questionnaire (Alutu A.N.G, 2000). The reliability coefficient of the instrument was .80 using test re-test procedure. The data analysis was carried out using z-test and analysis of variance (ANOVA).

The dependent variable was attitude to maintenance of infrastructure while the independent variables were career, status and type of service provided. Four point likert scale was used to score positively worded items while the negatively worded items were scored in reverse order with undecided remaining zero.

Results

In this section, the analysis and interpretation of data collected for the study were presented based on the postulated hypothesis. In order to establish the overall attitudinal disposition of the centre population of service providers, the individual raw scores were converted to z score. The normal curve distribution showed that only 47% (85) of the service providers were positively disposed to good maintenance practice while 53% (95) were not.

Hypothesis 1

It was hypothesized that there would be no significant difference in attitude towards maintenance of facilities between engineers in public and private sector services.

file average scores of the engineers in private and public sectors were computed and subjected to t-test. The result is shown in table 1.

Table 1: Attitude of Engineers in Public and Private Sectors

Service providers	N		SD	df			Decision
Engineers in public	30	93.6	9.29	58	3.18	1.54	Sig.
Engineers in private service	30	102.1	11.0				

z-cal > z crit at .05. hence significant

Since the calculated z (3.18) is greater than the critical (1.54) the null hypothesis of no significant difference is rejected, hence, there is significant difference (p < .05) between the

attitudes of engineers in public services and those in private sectors towards maintenance of facilities.

Hypothesis 2

It was hypothesized that there would be no significant difference in attitude towards maintenance of facilities between the chief executives in public and private sectors. The scores of chief executives were computed and subjected to z-test and the result is shown in Table 2.

Table 2: Attitude of Chief executives in Public and Private Sectors

Service providers	N	X	SD	df	z-cal	z-crit	Decision
Chief executives in public service	30	62.4	21.93	58	7.39*	1.54	Sig-
Chief executives in private	30	98.2	14.16				

z-cal > z-crit at .05, hence significant

Since the calculated z (7.39) is greater than the critical z (1.54) the null hypothesis is rejected and the alternative hypothesis is upheld.

Hypothesis 3

It was hypothesized that there would be no significant difference in attitude towards maintenance of facilities between operatives in public and private sectors. The scores of the operatives in private and public sectors were computed and subjected to z-test and the result is shown in Table 3.

Table 3: Attitude of Operatives in Public and Private Sectors

Service Providers	N	A'	SD	df	z-cal	z crit	Decision
Operatives in Public service	30	91.5	10.9	58	0.78*	1.54	Not sig.
Operatives in Private service	30	93.6	9.92				

z-cal < z-crit. at .05, hence not significant

Since the calculated z (0.78) is lesser than the critical z (1.54) the null hypothesis of no significant difference between attitudes of operatives in public and private sectors is retained.

Hypothesis 4

It was hypothesized that there would be no significant difference in attitude towards maintenance of facilities between chief executive who are engineers and those who are not. The scores of the chief executive who are engineers and those who are not were computed and subjected to z-test and the result is shown in Table 4.

	N	V	SI)	df	z-cal	z-crit	Decision
Chief executives Who are engineers	18	97.17	22.26	61	2.2*	1.54	Sig.

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Chief Executives	45	83.40	97.17				
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$z_{cal} > z_{crit}$ at .05 hence, significant

Since the calculated z (2.2) is greater than the critical z (1.54), the null hypothesis is rejected and alternative hypothesis is upheld.

Hypothesis 5

It was hypothesized that there would be no significant difference in attitudes towards maintenance of facilities between all service providers: engineers in public service, engineers in private service, chief executive in public service, chief executive in private service, operatives in public service and operatives in private service. The scores of all these service providers were computed and subjected to one-way analysis of variances (ANOVA) and the result is shown in Table 5.

Table 5: Attitude of Service Providers Based on Their Occupation

Source of variation	Df	SS	MS	F-cal	F-crit	Decision
Between group	K-I=5	16.89x10 ³	8445	MSB		Sig.
Within group	N-k=174	21.00x10 ³	241038	MSW	3.02	
Total	N-1 = 179	37.89x10 ³		32.58*	3.02	

$F_{cal} > F_{crit}$ at .05. hence significant

Since the calculated f_{cal} (32.58) is greater than the critical $f_{cr.}$, (3.02), the null hypothesis is- rejected and the alternative hypothesis upheld. In order to establish the direction of difference, the groups were paired and subjected to scheffe's post-hoc analysis for public and private sector service providers respectively (see Tables 6 and 7).

Table 6: Scheffe's Post-Hoc Analysis for Public Sector Service Providers

Paired groups	$\bar{X}_i - \bar{X}_j$	$X_i - X_j$	Scheffe's f-cal	Scheffe's f-crit at.05 level	Decision
Public sector engineers and public sector chief executives	93.60 62.40	31.2	77.28	3.0*	Sig.
Engineers and operatives	93.6 91.5	2.1	0.77	3.0*	Not sig.

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Chief executives and operatives	62.40				
	91.5	29.1	57.64	3.0*	Sig.

$t < 0.05$

Table 7: Scheffe's Post-Hoc Analysis for Private Sector Service Providers

Paired Groups	X	X X,	Scheffe's f-cal	Scheffe's f-crit at.05	
Engineers And Operatives	102.10 93.60	8.5	14.48	3.0*	Sig.
Chief Executives And Operatives	98.20 93.60	4.6	3.16	3.0*	Sig.
Engineers And Chief Executives	102.10 98.20	3.9	2.07	3.0	Not Sig.

$t < 0.05$

It was observed that there is significant difference in attitude between engineers and **chief** executives in public sector in favor of engineers, and between chief executives and operatives **in** public sector in favor of operatives and no significant difference between engineers and operatives **in** public sector.

The Scheffe's post-hoc test has also indicated that:

- There is significant difference in attitude to maintenance of facilities between engineers **and** operatives in private sector in favor of engineers;
- There is significant difference in attitude to maintenance of facilities between chief executives and operatives in private sector in favor of chief executives; and
- There is no significant difference in attitude to maintenance of facilities between engineers and chief executives.

Discussions

The respondents' scores on the attitude scale ranged from 43 to 118 (M=90.2) Respondents scoring above the mean (n = 85. 47% of the sample) were positively disposed; respondents scoring below the mean (n = 95. 53% of the sample) were negatively disposed to good maintenance culture. Statistical analysis revealed significant difference between the scores of engineers in private service (M = 102.1) and engineers in public service (M = 93.6; z = 3.18 p < .05) (See Table 1). On the average, engineers in public service are less interested in inculcating good maintenance culture than engineers in the private service.

Statistical analysis revealed no significant difference between the scores of operatives in private service. (M - 93.6) and operatives in public service (M = 91.5; / . = .78, P > 0.05) (see Table 3). There is marked significant difference between the attitudes of chief executives in the private service (M = 98.2) and the chief executives in the public service (M - 62.4, z = 7.39; p<0.05) (see Table 2). Thus, chief executives in public service have less interest in maintenance of infrastructure than their counterparts in the private sector.

Statistical analysis showed significant difference between the scores of chief executives who are engineers (M = 97 .17) and chief executives who are not engineers (M = 83.4; z = 2.2, p < . 0.05) (see Table 4). Non-engineer chief executives are less interested in good maintenance culture than their engineer counterparts. The ANOVA comparing the scores of the different categories of respondents yielded significant differences between the six groups (P (5.174) =32.58, p <0.05) (see Table 5). Scheffe's post-hoc analysis, revealed that the chief executives in

public service ($M = 62.4$) were more negatively disposed to good maintenance culture than the engineers ($M = 93.6$), and operatives ($M = 91.5$) in the same public service (see Table 6). The deference between the scores of engineers and operatives in the public service was not significant. Scheffe's post-hoc analysis also revealed that the operatives in private sector ($M = 93.6$) are more negatively disposed to good maintenance culture than engineers ($M = 102.1$) and chief executives ($M = 98.2$) in the same service (see Table 7). However, the difference in scores between the chief executives ($M = 98.2$) and the engineers ($M = 102.1$) in the private sector was not significant at .05 alpha levels.

Implications

Chief executives, engineers, and operatives in both the public and private sectors of the economy were the target of this study. These group of practitioners were chosen because they were directly involved with facility maintenance in their various establishments. Statistical analysis showed that only 47% of the respondents were positively disposed to good maintenance practice while 53% of the respondents were not. This shows that the poor state of infrastructural maintenance in the country is not only due to technical factors but also due to human factors as well. Thus attitude and mindset change is needed to provide improvement on the maintenance culture. The success of war-against indiscipline of the early 1980's proved, for a brief period, that the mindset of people could change for good. It was found that engineers and chief executives in the private sector have better attitude towards maintenance than their counterparts in the public sector. This finding is obvious, because private sector staff brook no delays and are less likely to be held up by bureaucratic practices, as can be the case in the public service. Public service engineers serve committees and boards and would seek approval before taking decisions. However, there is a general nonchalant attitude of public sector-workers in Nigeria, which supports the low scores by workers in public office. It should also be noted that engineers and chief executives in private concerns deal with personal or private properties and as such tend to be more maintenance conscious. The private sector staff can be fired easily and replacement for them found the next day.

Another finding is that operatives in the public and private concerns do not differ in their attitude to maintenance of infrastructural facilities. This can be explained by the fact that operatives do not take decisions on their own; rather they wait for instructions from their superiors-engineers and chief executive. This is true for either private or public sector settings. The only exception is perhaps the response of the operatives to minor repairs without having to wait for approvals of fund or special equipment from the superiors.

A major finding is that the scores of the chief executives that are non-engineers differ significantly from those who are engineers. The chief executives' duties during maintenance, centre on budgeting, making fund available and releasing fund for maintenance duties. These aspects create bottlenecks where there is low interest on the part of the chief executives. However, where the engineer is the executive himself, decision making in these matters becomes very fast and good maintenance culture is practiced. There was a marked significant difference between the scores of the six groups of respondents when they were compared using analysis of variance. The direction of significance indicates that the chief executives in public service were more negatively disposed to good maintenance culture than engineers and operatives in the private service. This is explained by the fact that engineers and operatives by virtue of their professional training and practice are people that can roll their sleeves and get things done and therefore are better disposed to good maintenance consciousness than the chief executives who may not be engineers. Finally operatives in the private sector are more negatively disposed to good upkeep than engineers and chief executives in the same system. Operatives are the skilled workers who are always directed before they function with the exception of routine assignments. Hence their work depends on the decisions taken by their superiors.

Recommendations

For better future handling of maintenance of civil engineering infrastructural facilities in Nigeria the following steps need to be taken:

1. A general mindset change is required from the entire citizenry towards good maintenance practice.
2. Clients/promoters/ or owners of facilities should:
 - I. Define maintenance requirements in their briefs to designers.

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- II. Budget for care taking and maintenance.
 - III. Have intention and ability to finance care taking and maintenance on completion of projects.
 - IV. Ensure a system of timely action for regular inspection and subsequent repairs.

3. Designers should

- (i) Choose appropriate materials that suit the environment
- (ii) Find solutions which are within confines of brief and budget.
- (iii) Take into account inspection and maintenance needs within design.
- (iv) Consult would-be maintainers and incorporate information on their experience into solution.
- (v) Explain overall requirements and limitations of the solution to maintainers.

4. Contractors should

- i) Follow due process in the procurement of contracts.
- ii) Should build as designed.

For mindset change, seminars, conference refresher courses training and retraining should be organized at various levels for the entire citizenry. Above all, due process and fairness should be applied in procurement of design and award of contracts to contractors.

Conclusion

The present study confirms that the failure in obtaining adequate infrastructural maintenance in Nigeria is not solely due to technical factors but also due to social and human factors such as the attitude of the service providers. Of the 180 service providers, 95 demonstrated attitudes that support poor infrastructural maintenance practice. Engineers and chief executives in private sector took facilities maintenance more seriously than their counterparts in the public service. However, chief executives who are engineers by profession manage facilities maintain better than those who are not engineers. Operatives have equal tendency with regard to facilities maintenance irrespective of where they work. Above all, mindset change on attitude to facility maintenance is needed by Nigerians, if facilities are to be kept in as far as possible in their original constructed forms.

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