Maintenance Performance of Prison Facilities in Southwestern Nigeria

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Abstract

Maintenance performance measurement aims to assess and improve the value created after maintenance efforts, as it determines the impact of maintenance on the performance of a system or facility and its business process. As objects of maintenance, prison facilities ought to provide a safe and decent environment for prison staff and prisoners to work and live in, as well as for all others who interact with the facilities. This study evaluates the satisfaction ratings of maintenance performance of prison facilities in Southwestern, Nigeria. A survey approach was adopted to collect data from the relevant Nigerian prison staff population of 2,187 prison workers, excluding staff in the maintenance unit within a specific period. Stratified sampling technique was used to generate a sample of 1,094, which is representative of the entire population across the prisons. Three hundred and eighty (35%) out of the one thousand and ninety-four copies of the questionnaire were completed and returned. Data collected were analysed using the SPSS package. The study found that prison staff showed satisfaction with the level of cleanliness in the prison environment, quality of water and control of ventilation employing a window, as well as partial satisfaction with the twenty-nine other criterion assessed. Overall, the study indicated partial satisfaction for performance on prison facilities and established a significant agreement among prison staff regarding the perception of the performance of prison facilities. The research, therefore, suggests continuous evaluation of maintained prison facilities to ascertain their condition and performance levels.

Keywords: Maintenance Performance Criteria; Prison Facilities; Prison Staff; Satisfaction Ratings

1. Introduction

In the maintenance management of facilities, the planning, directing, organising and controlling of maintenance activities and services are mandatory (Zawawi, Kamaruzzaman, Ithnin, & Zulkarnain 2011). Also crucial are measures for evaluating the performance of the facilities to obtain maximum returns on investment. Abd Rani, Basharun, Akbar & Nawawi (2015) observe that maintenance management involves improving and sustaining facility functions, services and surrounding areas. Maintenance management adopts a systematic approach involving standard regulations to be implemented by competent personnel.

Prison facilities are expected to be fit for purpose, safe from attack, help in rehabilitating inmates before their discharge, and compliant with the current legal framework while meeting standard requirements regarding health, ventilation, floor space, heat and lighting (Consoli 2005; Office of the High Commissioner for Human Rights [OHCHR] 2008; United Nations Office on Drugs and Crime [UNODC] 2014). Many Nigerian prison facilities have maintenance-related challenges, such as facility decadence, sick building syndrome (itchy skin, headaches, stuffy nose etc.), poor ventilation, poor standard of cleanliness and lack of repairs in the cell blocks (Health and Safety Executive [HSE] 2000). It is mostly the case that maintenance of facilities is not done in line with actual maintenance needs, owing to inadequate funding by the relevant authorities (www.budgetoffice.gov.ng). These problems are primarily attributed to the reactive maintenance approach syndrome.

In recent times, studies on assessment of hostel facilities (Adewunmi, Omirin, Famuyiwa, & Farinloye 2010), banking buildings (Faremi 2012), the performance

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of hospital buildings (Adenuga 2008) and tenants' satisfaction in housing (Oladapo 2006) have emerged. There have also been studies on how well those buildings or facilities match users' needs and on ways to improve design, performance and fitness for purpose. While these previous studies offer useful insights that might be applied in the context of Nigerian prison facilities, an in-depth evaluation of prison facilities is necessary owing to their peculiarity and intensity of use (Oladapo 2005) as well as the basic standards expected from the usage of prison facilities lighting (UNODC 2014).

Consequently, the performance evaluation of prison facilities will involve systematic evaluation of opinions about facilities in use, especially from the viewpoint of the people who use them. Such critical appraisal enables facility owners, maintenance managers and designers to benchmark the quality of services ranging from maintenance and cleaning to the provision of office furniture (Wauter 2005). Critical appraisals also allow the provision of recommendations for improving facilities services (Adewunmi et al. 2011). This is likely to benefit the prison organisation and users of the prison facilities by extending the life span of prison facilities and the satisfaction derived from the quality of maintenance activities (Abd Rani et al. 2015). It is therefore imperative to have a structured programme which is capable of maintaining prison facilities to required standards, ensuring their availability and enhancing their performance (Her Majesty's Prison Service 2005). Against this backdrop, this study researches into the maintenance performance appraisal of prison facilities by assessing the perception of prison staff on their satisfaction ratings based on articulated maintenance performance criteria.

2. Literature Review

The maintenance objectives and activities of the prison maintenance unit must align with the overall prison reformative, corrective and rehabilitative functions (Parida & Chattopadhyay 2007). In Nigeria, the state headquarters of the prison service handles the management and administration of maintenance activities and decisions, while individual prisons control the deployment of maintenance staff. This type of administrative system is known as semi-centralised (Williams, 2004).

Maintenance management is an orderly and systematic approach to planning, organising, monitoring, and evaluating maintenance activities and their costs (Technical Information Document 2000). It also involves controlling and executing maintenance activities which ensure optimum levels of availability of facilities and overall performance of plants, buildings or facilities (Davies & Greenough 2001). The process involves clear maintenance policies and techniques which could be adopted to keep facilities serviceable while minimising cases of breakdown (Shohet, Lavy-Leibovich & Bar-On 2003; Abd Rani et al. 2015).

Technically speaking, the scope of maintenance management covers every stage in the life cycle of a system (i.e. plant, equipment or facility), as well as processes of acquisition, planning, operation,

performance evaluation, replacement and disposal (Murray et al. cited in Tsang, Jardine & Kolodny, 1999). This implies that maintenance management ideas for prison facilities should be conceived right from the acquisition of the facilities and run through the stages of evaluating the performance of facilities to replacing of facilities due to wear and tear and disposing of obsolete prison facilities (Ajayi 2016). Consequently, having an effective maintenance management structure with competent maintenance staff will improve quality and extend the life span of prison facilities, while also enhancing the health, comfort and safety of occupants (Technical Information Document 2000; Abd Rani et al. 2015).

2.1 Maintenance efficiency
Efficiency is defined as a function of value and productivity. Karlof (cited in Then, 1995) described efficiency as "value created in relation to productivity." Value could be described as the relationship between utility and price, while productivity may be viewed as the relationship between the number of units, products or services produced and cost. In the context of this study, value is perceived as customer (prison staff or inmates) satisfaction while productivity is the number of maintenance services undertaken on prison facilities (Pun, Chin, Chow, & Lau 2002).

According to the United Nations Centre for Human Settlement [UNCH] (2003), efficiency is the amount of input resource, usually in monetary terms, per unit of maintenance service delivered. This might as well be described as all inputted maintenance resources such as human resource, equipment/plant/tools/spare parts and finances per unit of quality of maintenance activities provided by the maintenance unit of the Nigerian Prison Service. These resources are imputed to meet up with the prison staff requirements and expectations (Bleul 2004).

2.2 Maintenance performance measurement
Maintenance performance focuses on the condition of facilities in relation to customer service; it allows for duly recognising the impact of maintenance on the performance of a system and business (Murthy, Atrens, & Eccleston 2002). Maintenance Performance Indicators (MPIs) are sets of measures used for measurement of maintenance impact on the process. They are sets of metrics used to quantify the efficiency and effectiveness of maintenance actions (Parida & Uday 2009). These measures are equipped with baselines and realistic targets to facilitate prognostic and diagnostic processes and justify associated decisions and subsequent actions at appropriate levels in the organisation to create value in the business process (Liyanage & Kumar 2002).

Several performance indices on reliability, availability and productivity are widely used in relation to production plant/equipment and service industries. Overall system effectiveness measures whole organisations while individual system effectiveness measures items/components. Evaluating the performance of entire organisations or any items/components/facilities reveals whether there are substantial achievements in individual systems or there is a success in continuous improvement. Where a particular system/facility degrades rapidly,

overall system effectiveness deviates accordingly. Consequently, such deviation hastens organisations to implement correction (Pun et al. 2002). MPIs helps organisations to recognise what maintenance is doing, that is, the effect of maintenance on business (reformatory) performance and reliability of buildings/equipment /facilities within the organisation (Wardhaugh 2004). In essence, MPIs measure and identify performance gaps between current and desired performance, thereby providing improvement to close up the identified gaps.

In the literature, performance indicators which are suitable for measuring the performance of the business process and facilities of the organisation have been developed. Ellingsen, Kumar, Hamre, Waldeland, Nilsen, Dragesaet and Liyanage (2002) suggest a performance measurement framework for the Norwegian oil and gas industry which is based on a balanced scorecard model to include financial indicators, customer perspective, infrastructure and innovation. Hagerby and Johansson (2002) developed Key Performance Indicators, which were evaluated and benchmarked among six process industries in Norway and Sweden. These KPIs include total effective equipment productivity, the direct cost of maintenance, redundancy, customer satisfaction index of the maintenance service, rework direct cost due to maintenance, and health safety environment cost due to maintenance. Their study investigated the companies' strategies and processes as well as their influence on the indicators. The study confirmed difficulties in benchmarking maintenance organisations due to the poor and inconsistent classification of data as well as the diversity of operating conditions.

A study on practice of maintenance operations in six large-scale steel, public utility, transportation, and process industries in Hong Kong and Canada found that the most frequently used measures for performance are financial indicators such as operation cost, maintenance cost, equipment availability, labour productivity, and number of incidents caused by in-service failures (Tsang et al. 1999). These measures are primarily used for operational control purposes, and they reflect short-term performance outcomes. Further, the study also reveals the unawareness of organisation/management of the fact that measurement systems could achieve vertical alignment of goals and horizontal integration of activities. According to Wardhaugh (2004), the study identifies useful indicators for maintenance to include the reliability of equipment, quality and speed of execution/responses, maintenance costs, and prediction of failure. The study concludes that KPIs should drive a proactive maintenance performance that will fuse into the organisation's business. Parida and Chattopadhyay (2007) opine that performance measurement involves monitoring maintenance and employee satisfaction against a list of maintenance performance indicators. Among the list are equipment-related indicators, maintenance task-related indicators, cost-related indicators and impact on customer satisfaction. Other indicators affirmed by the study are learning and growth, health, safety, security and the environment (HSSE) as well as employee satisfaction.

Furthermore, studies by Kotze and Visser (2012) on the South African mining industry identified the extent of use of 32 maintenance performance indicators in maintenance organisations. The most frequently used indicators include safety audits score, reliability, frequency of breakdown, equipment utilisation, lost time frequency rate, cost per unit, total downtime, meantime repair, and schedule compliance. The least-used indicators include total productive maintenance, percentage of maintenance tasks done by operations, continuous improvement and customer satisfaction. Oladapo (2005; 2006) identifies some concepts in staff housing maintenance performance, such as customer satisfaction measures, reliability of building services, number of tenant complaints, and responsiveness of the maintenance unit to tenant's needs. Based on the overall maintenance of the staff house, the study established that 31.1% of the respondents rated their satisfaction below average, while 28.4% rated it above average. A more balanced approach to maintenance performance measurement emphasises the level of occurrences on maintenance performance measures. The most utilised measures include technical, economic and safety measure as well as human resources while the least used measures include training/learning, skills/competencies, work incentives, process performance, customer satisfaction and employee satisfaction (Simoes, Gomes & Yasin 2011).

Without doubt, the condition of buildings or facilities is a measurement maker and a typical way to measure and predict the performance of facilities (Wahida, Milton, Norazela, Nik Mohd & Abdul Hakim 2012). This suggests that for the maintenance management process to be completed in systems or facilities, the performance of such a system must be evaluated to ascertain its condition. In essence, assessing the performance of prison facilities will help in evaluating the impact of maintenance activities on the value of the facilities (Al-Najjar 1996; Parida & Uday 2009). Considering that the current study focuses on the performance of prison facilities, it is essential to categorise their performance variables for adaptability within the Nigerian prison context. The relevant variables are quality of space, response to complaints, maintenance-task related indicators, and cost-related indicators.

3. Research Method

This section explains the method of collecting data and the procedures taken to outline the steps addressing the study. The study adopts a survey approach for assessing the perception of prison staff on the satisfaction derived from maintenance performance of prison facilities. The population comprises prison staff in Southwestern Nigeria, while the sample frame includes prison staff with the exclusion of staff in the maintenance unit. As a relatively new area of interest within a prison context, the study examined customer satisfaction based on the consumer's perspective and the maintenance impact on the customer's business process, which means that the value generated for the customer is assessed and not the view of the maintenance service provider. The stratified sampling technique was used to determine the sample size (Columbia Centre for New Media and Teaching [CNMTL] 2012). The population of prison staff (non-maintenance) in Lagos (Ikoyi, Badagry, Maximum,

Minimum and Female prisons, Kirikiri), Ogun (Old Abeokuta, New Abeokuta, Ijebu-Ode, Ilaro and Shagamu prisons), Oyo (Oyo and Agbodi prisons), Osun (Ile-Ife and Ilesha), Ondo (Akure, Ondo male, Ondo Female, Owo, Okitipupa prisons) and Ekiti prison was investigated to determine the researchable sample at a 95% confidence level and a 0.05 precision level (Israel 2013). Data for the study was collected through copies of the questionnaire and analysis of the study data was done with the SPSS statistical package.

4. Discussion of Findings

Table 1: Sample size for prison non-maintenance staff in southwestern Nigeria

Prison (strata)	Population size	Sample size
Lagos prisons	624	244
Ogun prisons	331	181
Oyo prisons	338	183
Osun prisons	307	174
Ondo prisons	453	212
Ekiti Prison	134	100
Total	**2187**	**1094**

Source: www.gov.ng/prison-info

The minimum sample sizes needed for the study was 244, 181, 183, 174, 212 and 100, respectively (see Table 1). For this study, the accuracy of ±5% was desired; hence, the sample size of one thousand and ninety-four (1,094) was generated.
Table 2 describes the number of returned copies of the structured questionnaire from each prison locations. A total of 380 copies of the questionnaire (35%) were returned out of the 1,094 copies administered.

Table 2: Survey returns of copies of questionnaire

Prisons	Prison staff (Non-maintenance)		
	Sample size	Number returned	Response rate %
Lagos	244	93	38.11
Ogun	181	86	47.51
Oyo	183	46	25.41
Osun	174	38	21.83
Ondo	212	87	41.03
Ekiti	100	30	30
Total	**1094**	**380**	**34.73**

Table 3 presents information on the educational background of the prison staff. Results revealed that ninety-six (25%) members of the prison staff had the Ordinary National Diploma certificate. Seventy-two (19%) had Higher the National Diploma certificate and one hundred and one (27%) had first degree certificates. Furthermore, twenty-eight (7%) members of staff and one (less than 1%) member of staff had master's degrees and PhD qualifications respectively. The figures suggest that the data from the copies of the structured questionnaire would be useful and reliable to some extent. Also, Table 3 shows that two hundred and eight (55%) respondents had a length of service of fewer than ten years. One hundred and fifty-six (41%) respondents had a length of service between ten (10) years and twenty-nine (29) years, while eight (2%) respondents had been in service for more than thirty (30) years. This implies the availability of a reasonable number of respondents from whom data can be retrieved on the survey.

Table 3: Demographic profile of respondents

Demographic profile	Options	Frequency	Percentage
Educational qualification	OND	96	25
	HND	72	19
	B.Sc./ B.Tech	101	27
	M.Sc.	28	7
	PhD	1	1
	Others	74	19
	Missing	8	2
Length of service	Less than 10 years	208	55
	10 – 19 years	104	27
	20 – 29 years	52	14
	30 years and above	8	2
	Missing	8	2
Total		**380**	**100**

4.1 Prison staff satisfaction level in Southwestern Nigeria

The performance of prison facilities was assessed based on prison staff satisfaction ratings using maintenance performance criteria (Adewunmi et al., 2010) on a Likert scale. The finding were interpreted on a graduated scale of 1– 5: $1.00 \leq MS < 1.49$ means high dissatisfaction, $1.50 \leq MS < 2.49$ means dissatisfaction, $2.50 \leq MS < 3.49$ means partial satisfaction, $3.50 \leq MS < 4.49$ means satisfaction and $4.50 \leq MS \leq 5.00$ means high satisfaction. Some common variables were extracted from the literature and simplified for adaptation within the context of Nigerian prisons. The satisfaction survey instrument is a simple 32-item questionnaire. The questions relate to financials (money spent on reporting faults, spare parts), equipment efficiency (security, communication, fire safety gadget), labour productivity (maintenance unit response to complaints, quality of work done by maintenance staff), and infrastructure (vehicular access, adequacy of car park, meeting space, exterior and interior of buildings, quality of water). These also involve indicators related to maintenance tasks, such as quality and speed of execution, the responsiveness of workforce, as well as asset inventory and indicators related to maintenance costs (Oladapo, 2005; Adewunmi et al., 2010).

Table 4 presents the frequency count and the mean score of the level of satisfaction for each performance criterion. The mean scores for each criterion ranged from 3.82 to 2.66.

The results in Table 4 suggest satisfaction among the prison staff on some criteria. The aspects of the prison environs deemed as providing satisfaction to prison staff are highlighted as follows:

• Level of cleanliness in prison environment (3.82 mean score; 24.8 per cent highly satisfied and 46.4 per cent satisfied)

• Quality of water (3.57 mean score; 2.1 per cent highly satisfied and 39.1 per cent satisfied)

• Control of ventilation using windows (3.55 mean score; 17.8 per cent highly satisfied and 39.5 per cent satisfied)

Also, Table 4 suggests partial satisfaction among the prison staff on the following criteria:

• Quality of work done by maintenance staff (3.42 mean score; 15.7 per cent highly satisfied; 33.3 per cent satisfied and 33.3 per cent partially satisfied)

• Adequacy of the car park (3.41 mean score; 19.2 percent highly satisfied; 32.8 percent satisfied and 26.4 percent partially satisfied)

• Space for meetings (3.39 mean score; 17.2 percent highly satisfied; 35.5 percent satisfied and 24.5 percent partially satisfied)

• Waste removal (3.37 mean score; 13.7 percent highly satisfied; 38.3 percent satisfied and 25.6 percent partially satisfied)

• Adequacy of artificial and natural lighting (3.37 mean score; 12.2 percent highly satisfied; 35.6 percent satisfied and 34.5 percent partially satisfied)

• (3.37 mean score; 13.7 percent highly satisfied; 38.3 percent satisfied and 25.6 percent partially satisfied)

• Quality of building exterior (3.34 mean score; 13.2 percent highly satisfied; 33 percent satisfied and 32.4 percent partially satisfied)

• Quality of building interior (3.33 mean score; 15.3 percent highly satisfied; 27.8 percent satisfied and 35.1 percent partially satisfied)

• Vehicular access (3.31 mean score; 14.2 percent highly satisfied; 33.1 percent satisfied and 31.5 percent partially satisfied).

Furthermore, Table 4 lists the aspects of the prison environs which are deemed to provide the least partial satisfaction to prison staff:

• Security (CCTV, alarm system, digital video recorder etc.) (2.66 mean score; 14.2 percent highly satisfied; 33.1 percent satisfied and 31.5 percent partially satisfied)

• Ease of communication (telephone, internet facilities, voice speakers' etc.) (2.70 mean score; 11.4 percent highly satisfied; 22.7 percent satisfied and 18.3 percent partially satisfied)

• Fire safety (2.97 mean score; 10.9 percent highly satisfied; 25.4 percent satisfied and 29.3 percent partially satisfied)

• Exit route (2.98 mean score; 14.2 percent highly satisfied; 27.2 percent satisfied and 19.1 percent partially satisfied)

• Level of maintenance backlog (2.98 mean score; 8.4 percent highly satisfied; 25 percent satisfied and 31.8 percent partially satisfied).

In general, only three performance criteria recorded mean scores ranging from 3.82 to 3.55, while the remaining 29 criteria had scores ranging from 3.44 to 2.66. This implies that members of the prison staff are partially satisfied with the performance of prison facilities. This suggests the low performance of prison facilities and could be a cogent reason why Nigerian prison facilities are perceived as places of punishment ("Prison of Horror," 2000; Nyakaisiki, 2008).

Table 5 also presents the mean scores of the level of satisfaction for each performance criterion on a state by state level. In Lagos prisons, the mean scores for each criterion ranged from 3.75 to 2.64. Prison staff showed satisfaction with the level of cleanliness at a mean score of 3.75 and partial satisfaction with all other criteria including ventilation 3.45, meeting space 3.38, quality of water 3.37, quality of buildings 3.36, lighting 3.27, ability to perform routine maintenance 3.24, waste removal 3.23, car park 3.22, level of maintenance backlog 2.80, money spent on purchasing minor parts 2.79, ease of communication 2.77, and security at mean score of 2.64. In Ogun prisons, mean scores for each criterion ranged from 3.92 to 2.61. Prison staff were satisfied with the level of cleanliness of the environment at a mean score of 3.92, control of ventilation through Windows 3.62 and quality of water 3.51. The prison staff were partially satisfied with all other criteria including the adequacy of car park 3.49, the odour of environs 3.48, quality of work done 3.42, lighting 3.39, waste removal 3.34, money spent on reporting faults 3.30, ability to prioritise maintenance works 3.26, and cost of transporting maintenance staff 3.26.

In Oyo prisons, mean scores for each criterion ranged from 3.77 to 2.51. Prison staff showed satisfaction with the quality of water 3.77, level of cleanliness of prison environment 3.73, waste removal 3.62, and quality of maintenance works 3.52. They also showed partial satisfaction with all other criteria including vehicular access 3.43, cost of transporting maintenance staff 3.41, routine maintenance 3.40, the behaviour of staff 3.37, communication 2.51 and dissatisfaction with security gadgets 2.40. Mean scores for each criterion in Osun prisons ranged from 4.03 to 2.59. Prison staff showed satisfaction with level of cleanliness in the prison environs at a mean score of 4.03, quality of water 3.83, ventilation 3.74, quality of work done 3.72, meeting space 3.71, behaviour of maintenance staff 3.69, adequacy of car park 3.67, exterior of building 3.67, odour 3.63, comfort level 3.63, waste removal 3.54 and partial satisfaction with money spent reporting faults 3.46, routine maintenance 3.45, ability to prioritise maintenance works 3.39, reporting of defect 3.14, level of nuisance 3.40, level of backlog 3.14, sound 3.12, speed of work 3.03, security 2.79, and ease of communication 2.59.

The mean scores of criteria in Ondo prisons ranged from 3.91 to 2.87. Staff showed satisfaction with level of cleanliness 3.91, quality of water 3.70, ventilation 3.69, quality of work done by maintenance staff 3.66, interior of buildings 3.62, lighting 3.55, adequacy of car park 3.54, meeting space 3.52, comfort level 3.50 and partial

satisfaction with waste removal 3.48, vehicular access 3.47, money spent on reporting faults 3.46, routine maintenance 3.45, behaviour of maintenance staff 3.44, fire safety 3.30, sound 3.30, money spent on purchasing minor parts 3.27, maintenance backlog 3.24, response time 3.14, ease of communication 2.88, and security 2.87. In Ekiti prisons, mean scores for each criterion ranged from 3.37 to 2.41. Prison staff showed partial satisfaction with most criteria including lighting at a mean score of

3.37, ventilation 3.37, level of cleanliness 3.33, adequacy of car park 2.90, quality of water 3.21, meeting space 3.20, speed of work 3.10, quality of work done 3.07, comfort level 3.03, response time 3.00, interior of building 2.96, ease of communication 2.67, sound 2.63, odour of environs 2.60, money spent on purchasing minor parts 2.50, and dissatisfaction with cost of transporting maintenance staff 2.41.

Table 4: Prison staff perception on maintenance performance of prison facilities

No	Performance criteria	Prison staff responses %					MS
		HS	S	PS	D	HD	
Quality of space							
1	Level of cleanliness in the prison environment	24.8	46.4	19.7	3.7	5.3	3.82
2	Waste removal	13.7	38.3	25.6	16.2	6.2	3.37
3	Adequacy of artificial and natural lighting	12.2	35.6	34.5	12	5.7	3.37
4	Control of ventilation by means of windows	17.8	39.5	28.1	9.5	5.1	3.55
5	Odour of environment	13.7	32.8	27.7	15.6	10.2	3.24
6	Comfort level in building	11.3	29.6	36.3	19.1	3.8	3.26
7	Space for meeting with visitors	17.2	35.5	24.5	14.8	8.1	3.39
8	Sound insulation	6.7	33.5	29.1	16.8	14	3.02
9	Furniture arrangement	7.6	29	32.8	19.5	11.1	3.02
10	Quality of exterior of building	13.2	33	32.4	17	4.3	3.34
11	Quality of interior of building	15.3	27.8	35.1	18.3	3.5	3.33
12	Quality of water	2.1	39.1	22.4	10.4	7.1	3.57
13	Fire safety	10.9	25.4	29.3	19	15.4	2.97
14	Security (CCTV, alarm system, digital video recorder etc.)	9.7	21.4	21.7	19.4	27.8	2.66
15	Ease of communication (telephone, internet facilities, voice speakers' etc.)	11.4	22.7	18.3	19.9	27.7	2.70
16	Exit route in case of emergency	14.2	27.2	19.1	21.3	18.3	2.98
17	Vehicular access	14.2	33.1	31.5	12.3	8.9	3.31
18	Adequacy of car park	19.2	32.8	26.4	12.8	8.9	3.41
Response to complaints/repairs							
19	Procedure for reporting defects and getting work done	10.3	34	29.1	19	7.6	3.20
20	Time taken by maintenance unit to respond to complaints	8.4	28	30.5	21.6	11.6	3.00
21	Behaviour of maintenance unit staff	11.4	32.2	33.8	16.8	5.9	3.26
22	Level of maintenance backlog (i.e. defect you have reported but yet to be done)	8.4	25	31.8	25.3	9.5	2.98
23	Level of nuisance (i.e. disturbance and interference with your privacy by maintenance staff)	6.4	32.6	37.8	17.4	5.8	3.16
Maintenance task related indicators							
24	Asset inventory (i.e. the way maintenance staff identify physical features that require maintenance	8.7	31.4	35	19.5	5.4	3.18
25	Ability of maintenance department to prioritise maintenance needs with available resources	10.6	31.2	33.6	18.2	6.5	3.21
26	Speed of work (i.e. repairs time)	11.1	27.8	33.7	20.8	6.7	3.16
27	Quality of work done by maintenance staff	15.7	33.3	33.3	13.8	3.8	3.43
28	Ability to react to emergency maintenance	12.2	28.5	30.4	19.5	9.5	3.14
29	Ability to perform routine maintenance	15	26	36.3	16.6	6.1	3.27
Cost related indicators							
30	Money spent reporting faults	11.7	31.9	31.1	19.1	6.3	3.24
31	Cost of transporting maintenance staff	10.6	29.6	35.9	17.8	6	3.21
32	Money spent on purchasing minor parts	8.5	26.8	33.3	22	9	3.03
Grand mean							**3.21**

Where: MS=mean score

HS = highly satisfied, 5; S = satisfied, 4; P = partially satisfied, 3; D = dissatisfied, 2; HD = highly dissatisfied, 1. Interpretation scale: 1.00 ≤ MS < 1.49 means high dissatisfaction, 1.50 ≤ MS < 2.49 means dissatisfaction, 2.50 ≤ MS < 3.49 means partial satisfaction, 3.50 ≤ MS < 4.49 means satisfaction and 4.50 ≤ MS ≤ 5.0 means high satisfaction.

Table5: Prison staff perception on maintenance performance of prison facilities based on prisons state

No	Performance criteria	Prison staff responses						Pooled mean score
		Lagos prisons Ms	Ogun prisons Ms	Oyo prisons Ms	Osun prisons Ms	Ondo prisons Ms	Ekiti prison Ms	
Quality of space								
1	Level of cleanliness in the prison environment	3.75	3.92	3.73	4.03	3.91	3.33	3.82
2	Waste removal	3.23	3.34	3.62	3.54	3.48	3.00	3.37
3	Adequacy of artificial and natural lighting	3.27	3.39	3.18	3.37	3.55	3.37	3.37
4	Control of ventilation by means of windows	3.45	3.62	3.33	3.74	3.69	3.37	3.55
5	Odour of environment	3.12	3.48	2.96	3.63	3.34	2.60	3.24
6	Comfort level in building	3.13	3.10	3.16	3.63	3.50	3.03	3.26
7	Space for meeting with visitors	3.38	3.21	3.33	3.71	3.52	3.20	3.39
8	Sound insulation	3.01	2.87	2.98	3.12	3.30	2.63	3.02
9	Furniture arrangement	3.05	2.76	2.88	3.16	3.35	2.80	3.02
10	Quality of exterior of building	3.36	3.18	3.11	3.67	3.59	2.90	3.34
11	Quality of interior of building	3.31	3.24	3.14	3.42	3.62	2.96	3.33
12	Quality of water	3.37	3.54	3.77	3.83	3.70	3.21	3.57
13	Fire safety	2.84	2.70	2.91	3.35	3.30	2.83	2.97
14	Security (CCTV, alarm system, digital video recorder etc.)	2.64	2.51	2.40	2.79	2.87	2.76	2.66
15	Ease of communication (telephone, internet facilities, voice speakers' etc.)	2.77	2.61	2.51	2.59	2.88	2.67	2.70
16	Exit route in case of emergency	2.92	2.75	2.80	3.23	3.32	2.80	2.98
17	Vehicular access	3.20	3.24	3.43	3.61	2.90	3.31	3.31
18	Adequacy of car park	3.22	3.49	3.22	3.67	3.23	3.44	3.41
Response to complaints/repairs								
19	Procedure for reporting defects and getting work done	2.98	3.26	3.27	3.38	2.83	3.20	3.20
20	Time taken by maintenance unit to responds to complaints	2.90	2.87	2.95	3.28	3.00	3.00	3.00
21	Behaviour of maintenance unit staff	3.03	3.20	3.37	3.69	3.44	2.93	3.26
Response to complaints/repairs								
22	Level of maintenance backlog (i.e. defect you have reported but yet to be done)	2.80	2.96	2.88	3.14	3.24	2.87	2.98
23	Level of nuisance (i.e. disturbance and interference with your privacy by maintenance staff)	3.06	3.00	3.32	3.29	3.40	2.93	3.16
Maintenance task related indicators								
24	Asset inventory (i.e. the way maintenance staff identify physical features that require maintenance	3.02	3.14	3.30	3.24	3.40	2.79	3.18
25	Ability of maintenance department to prioritize maintenance needs with available resources	3.02	3.26	3.19	3.39	3.44	3.10	3.21
26	Speed of work (i.e. repairs time)	3.01	3.12	3.20	3.03	3.40	3.07	3.16
27	Quality of work done by maintenance staff	3.19	3.42	3.52	3.72	3.66	2.80	3.43
28	Ability to react to emergency maintenance	3.06	3.08	3.16	3.29	3.34	2.90	3.14
29	Ability to perform routine maintenance	3.24	3.12	3.40	3.42	3.45		3.27
Cost related indicators								
30	Money spent reporting faults	3.05	3.30	3.20	3.43	3.46	2.73	3.24
31	Cost of transporting maintenance staff	3.10	3.26	3.41	3.32	3.39	2.41	3.21
32	Money spent on purchasing minor parts	2.79	3.01	3.25	3.19	3.27	2.50	3.03
Grand mean		**3.09**	**3.15**	**3.18**	**3.40**	**3.41**	**2.91**	**3.21**

Where: HS = highly satisfied, 5; S = satisfied, 4; P = partially satisfied, 3; D = dissatisfied, 2; HD = highly dissatisfied, 1. Interpretation scale: $1.00 \leq MS < 1.49$ means high dissatisfaction, $1.50 \leq MS < 2.49$ means dissatisfaction, $2.50 \leq MS < 3.49$ means partial satisfaction, $3.50 \leq MS < 4.49$ means satisfaction and $4.50 \leq MS \leq 5.0$ means high satisfaction.

Comparing prison staff satisfaction among the state prisons, Osun prisons staff showed satisfaction with the highest number (12) of assessed performance criteria, ranging from 4.03 to 3.54. Ondo prisons showed satisfaction with ten performance criteria, ranging from 3.91 to 3.5. Oyo prisons showed satisfaction with four performance criteria, ranging from 3.77 to 3.52. Ogun prisons showed satisfaction with three performance criteria, ranging from 3.92 to 3.54. Lagos prisons showed satisfaction with only one (1) performance criterion, while Ekiti showed no satisfaction with any of the assessed performance criteria. Largely, Ekiti prison showed partial satisfaction with the highest number (31) of performance criteria, ranging from 3.37 to 2.50. Lagos prisons showed partial satisfaction with 30 performance criteria, ranging from 3.45 to 2.64 and Ogun prisons showed partial satisfaction with 28 performance criteria, ranging from 3.49 to 2.40. While Oyo prison staff were partially satisfied with 27 performance criteria, ranging from 3.43 to 2.51, Osun and Ondo prison staff were partially satisfied with 20, and ten performance criteria, respectively. Also, Oyo prisons and Ekiti prisons showed dissatisfaction with only one (1) criterion each, with mean scores of 2.40 and 2.41, respectively.

4.2 Hypothesis testing

To affirm staff satisfaction as an index for measuring the maintenance performance of prison facilities, there is a need to confirm the significance of agreement in their assessment of various maintenance performance criteria. For this reason, the study, therefore, postulates the following hypothesis.

Null Hypothesis: There is no agreement among prison staff (non-maintenance) on satisfaction ratings of prison facilities in Southwestern Nigeria.

Alternative Hypothesis: There is agreement among prison staff (non-maintenance) on satisfaction ratings of prison facilities in Southwestern, Nigeria.

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Table 6: Kendall's Coefficient of Concordance Test for Prison Staff Satisfaction with Maintenance Performance of Prison Facilities

Cases	Kendall's W	Chi-square	Df	P-value
255	0.75	596.115	31	0.001

A non-parametric Kendall's coefficient of concordance test for satisfaction ratings of prison facilities based on identified performance criteria was conducted. The result indicated that there was agreement among prison staff on the perception of maintenance performance of prison facilities at $P < 0.05$ levels; hence, the null hypothesis was rejected. This result is in agreement with findings on staff housing maintenance performance (Oladapo, 2006), the slight difference being the type of facility studied and the scale of measurements.

5. Conclusion and Recommendations

The study measured the impact of maintenance on prison facilities and value generated in terms of satisfaction from the use of facilities based on the performance criteria evaluated. The study revealed the satisfaction level for each assessed performance criterion. The study also showed partial satisfaction with maintenance performance of prison facilities and significant agreement among prison staff satisfaction ratings on the maintenance performance of prison facilities.

The study recommends continuous evaluation of maintained prison facilities to ascertain the condition and performance of facilities. The continuous assessment of prison facilities is a joint responsibility of the Nigerian Prison Service, Prison Works and Logistics Department, Maintenance Unit and users of prison facilities.

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