APPRAISAL OF ON-SITE SANITATION FACILITIES AND SOLID WASTE MANAGEMENT IN PUBLIC PLACES WITHIN AKURE MUNICIPALITY, NIGERIA

James Rotimi Adewumi[1], Temitope Fausat Ajibade[1,2] and Fidelis Odedishemi Ajibade[1,2*]
[1]Department of Civil and Environmental Engineering, Federal University of Technology Akure, Nigeria.
[2]University of Chinese Academy of Sciences, Beijing 100049, PR China

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*Corresponding author's email: foajibade@futa.edu.ng
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SUPPLEMENTARY INFORMATION

A. Estimation of population

Estimation of population in Oja-Oba market

The market has 3 major streets, with each street comprising of averagely 7 complexes (bungalow or storey building). Estimated number of on-street traders was 30 per street and hawkers was 20 per street. Also, 10 helpers were estimated in each street, estimated number of market officials including security, parking space etc. were 10 officials. Information from parking space official shows that average 300 vehicles including motorcycle and bicycle make use of the car park per day.

Table S1. Population estimate of Oja-Oba market

Population parameters	**Calculation**
No of major street	3 streets
Assume all are storey building	$7 \times 2 = 14$
Average number of shops per floor a in complex	8 shops
Total number of shops	$8 \times 14 = 112$ shops
Average number of traders per shops	1 trader
Total number of traders using shops	$1 \times 112 = 112$ traders
Average number of on-street trader per street	30 traders
Total number of on-street traders	$30 \times 3 = 90$ traders
Average numbers of hawkers per street	15 hawkers
Total number of hawkers in the market	$15 \times 3 = 45$ hawkers
Average number of helpers	8 helpers
Total number helpers in the market	$8 \times 3 = 24$ helpers
Estimated number of officials	10 officials
Average number of vehicles park per day + motorcycles	250 vehicles
Total number of traders (using shops + on-street)	$112 + 90 = 202$traders
Average numbers of passers-by without vehicle patronizing a trader	6 passers-by
Total number of customers without vehicle	$6 \times 202 = 1212$ customers
Estimated population per day	$1{,}212 + 202 + 250 + 24 + 10 = 1698$

Source: Field Survey, 2019.

Estimation of population in Isolo market

The market is characterised by varying food crops. Owing to its location and standard, Isolo market with few people. The market has only one section containing 6 block and 6 stalls in each block. All the passers-by enter the market on foot because of non-provision of parking space, some visitors make use of the road as their alternative parking space. 5 helpers were also identified in the market.

Table S2. Population estimate of Isolo market

Population parameters	**Calculation**
No of blocks in the market	8 blocks
No of stalls per block	7 stalls
Total number of stalls in the market	$8 \times 7 = 56$ stalls
Average number of passers-by in the market patronizing each trader	6 passers- by
Total number of passers-by in the market	$6 \times 56 = 336$ passers-by
Total number of helpers	5 helpers
Estimated population	$336 + 56 + 5 = 397$

Source: Field Survey, 2019.

Estimation of population in Isinkan market

The markets are divided into different sections- provisions sellers, food crops sellers, plastics sellers respectively. Each section is made up of 5 blocks and in each block were 6 stalls. Each section was provided with parking space in which 10 slots were supplied each and estimated number of vehicles using the space daily were 140 visitors. 10 officials were identify including the security personnel, actors in the markets.

Table S3. Population estimate of Isinkan market

Population parameters	**Calculation**
Number of sections	3 sections
Number of blocks per section	5 blocks
Total number of blocks in all sections	$5 \times 3 = 15$ blocks
Number of stalls per blocks	6 stalls
Total number of stalls in the market	$15 \times 6 = 90$ stalls
Numbers of trader per stall	1 trader
Total number of traders in the markets	$90 \times 1 = 90$ traders
Total number of visitors using the parking space	140 visitors
Average numbers of passers-by without vehicle patronizing a trader	6 passers-by
Total number of customers without vehicle	$6 \times 90 = 540$
Estimated number of officials	10 officials
Average number of helpers per section	5 helpers
Total number of helpers in the market	$5 \times 3 = 15$ Helpers
Estimated population per day	$540 + 140 + 90 + 10 + 15 = 795$

Source: Field Survey, 2019.

Estimation of population in NEPA market

The market has only one section characterized by food crop seller. The section is made up of 10 blocks and in each block were 6 stalls. The market is provided with parking space in which 10 slots and estimated number of vehicles using the space daily were 147 visitors. 10 officials were identify including the actors amidst others in the markets.

Table S4. Population estimate of NEPA market

Number of blocks in the market	**10 blocks**
Number of stalls per blocks	6 stalls
Total number of stalls in the market	$10 \times 6 = 60$ stalls
Numbers of trader per stall	1 trader
Total number of traders in the markets	$60 \times 1 = 60$ traders
Total number of visitors using the parking space	147 visitors
Average numbers of passers-by without vehicle patronizing a trader	6 passers-by
Total number of customers without vehicle	$6 \times 60 = 360$ customers
Estimated number of officials	10 officials

Total number of helpers in the market	12 helpers
Estimated population per day	$360 + 147 + 60 + 10 + 12 = 589$

Source: Field Survey, 2019.

Estimation of population in Ultra-modern car park

Casual observation shows that the loading bay is divided into two categories according to proximity of distance of the varying destination. The long-distance loading bay serve places like Lagos, Sagamu, Ijebu-Ode and so on while amidst the places serve by short distance loading bay are Igbekoda, Ile-Oluji, Igbekoda, Owo. The long distance bay has 7 doubled opposite stands and made comprise of buses while the short distance bay has 6 doubled opposite stands comprising cars. Averagely, each vehicle in the stands travel at least twice daily carrying 14 commuters and 1 driver in case of long distance or 5 commuters and a driver for short distance journey. Estimated number of officials were 10 and hawkers were also estimated as 10. 30 Shops were also provided out of which 10 shops has not been rented yet.

Table S5. Population estimate of Ultra-modern car park

Population parameters	**Calculation**
No of bay categories	2 categories
No of stands in long distance bay	7×2 (doubled) $= 14$ stands
No of stands in short distance bay	6×2 (doubled) $= 12$ stands
Total number of stands	$14 + 12 = 26$ stands
Average number of rounds per day for long distance	2 rounds
Average number of rounds per day for short distance	2 rounds
Numbers of people on board per journey for long distance bay (bus)	14 commuters $+$ 1 driver $= 15$ people
Numbers of people on board per journey for short distance bay (car)	5 commuters $+$ 1 driver $= 6$ people
Total number of people convey by long distance bay per round	$14 \times 15 = 210$ people
Total number of people convey by short distance bay per round	$12 \times 6 = 72$ people
Total number of people convey by long distance bay per day	2 rounds $\times$ 210 $=$ 420 people
Total number of people convey by short distance bay per day	2 rounds $\times$ 72 $=$ 144 people
Total number of people covey by both bay per day	$210 + 72 = 564$ people
Total number of officials	10 officials
Total number of shops	30 shops
Minus close down shops	$30 - 10 = 20$ shops
Numbers of traders per shop	1 trader
Total number of traders	20 traders
Total numbers of hawkers	10 hawkers
Estimated population	$420 + 144 + 10 + 20 + 10 = 604$

Source: Field Survey, 2019.

Estimation of population in Benin-Owo car park

Casual observation shows that car park is made up of only one loading bay separated into different stands according to proximity of distance of the varying destination. In total, there are 10 stands and comprise of buses and cars. Averagely, each vehicle in the stand travel at least twice daily boarding 14 commuters and 1 driver in case of buses or 5 commuters and a driver in case of cars. Estimated number of officials were 10 and hawkers were also estimated as 10. 20 Shops were also provided seller varying commodities.

Table S6. Population estimate of Benin-Owo car park

Population parameters	**Calculation**
Total number of stands	14 stands
Total number of stands with bus	10 stands
Total number of stands with cars	5 stands
Average number of rounds per day	2 rounds
Numbers of people on board per round using bus	$14 \text{ commuters} + 1 \text{ driver} = 15 \text{ people}$
Numbers of people on board per round using cars	$5 \text{ commuters} + 1 \text{ driver} = 6 \text{ people}$
Total number of people convey by bus	$10 \times 15 = 150 \text{ people}$
Total number of people convey by car	$5 \times 6 = 30 \text{ people}$
Total number of people convey by buses per day	$2 \text{ trips} \times 150 = 300 \text{ people}$
Total number of people convey by cars per day	$2 \text{ trips} \times 30 = 60 \text{ people}$
Total number of people covey by both bay per day	$300 + 60 = 360 \text{ people}$
Total number of officials	12 officials
Total number of shops	24 shops
Numbers of traders per shop	1 trader
Total number of traders	24 traders
Total numbers of hawkers	12 hawkers
Estimated population	$360 + 24 + 12 + 12 = 408$

Source: Field Survey, 2019.

B. Structured Questionnaire

Department of Civil and Environmental Engineering,
School of Engineering and Engineering Technology,
Federal University of Technology, Akure

Dear respondent,

This questionnaire is designed to facilitate the assessment of on-site sanitation facilities in public places in Akure. It should be known that this exercise does not have any hidden or implicating undertone but strictly for academic purpose.

Please tick (√) as appropriate

SECTION A: GENERAL INFORMATION

1. Status of respondent: Passerby ( ) Driver ( )
   Others (please specify)
2. Age of respondent: 18-25yrs( ) 26-35yrs( ) 36-45yrs( ) 46 and above( )
3. Gender : male ( ) female ( )
4. How often do you come here? Daily ( ) Weekly ( ) Monthly ( ) Rarely ( )
5. How long have you been coming to this place: Less than a year ( ) between 1-5yrs () between 5-10yrs ( ) more than 10yrs ( )
6. Do you consider it necessary and important, the availability of sanitation facilities (Toilet, Urinal, Solid waste disposal) in a public place? Yes ( ) No ( )

SECTION B: ASSESSMENT OF SANITARY FACILITIES:

7. Do you know if there are sanitation facilities here? No ( ) Yes ( )
8. If No, how do you handle the call of nature (i.e. Urinating, defecating etc) while still in the premises?

(a) Go to the nearby family friends house to answer the call of nature ( )
(b) Return home quickly without completing the assignment to answer the call of nature ()
(c) Manage the inconveniences until finishing the assignment to answer the call of nature ()
(d) Go home with the solid wastes generated for disposal ()
(e) Uncontrolled disposal of solid wastes to the market ()

9. If yes, which of these facilities are available here? Toilet( ) Urinal ( ) Solid waste disposal ( )
10. Are the facilities sufficient to cater for the populace? Yes () No ()
11. What is the approximate distance of their location?
12. Where are they located: At each junction ( ) Attached to each section ( ) Away from the premises ( )

13. Are these facilities maintained regularly? Yes () No()
14. How often do you use the sanitation facilities: Regularly ( ) Occasionally ( ) Never ( )
15. How would you rate your overall experience at using the sanitation facilities: Highly satisfactory ( ) Satisfactory ( ) Neutral ( ) Unsatisfactory ( ) Highly Unsatisfactory ( )
16. Do you pay for any of these services? Yes () No ()
17. How much do you pay?

Toilet usage _____

Urinal usage _____

Solid waste disposal _____

18. Is the amount you were charged convenient? Yes ( ) No ( )
19. If No, how much can you afford per usage?
20. If yes, are you willing to pay more for better services?

(a) Daily

(b) Weekly

(c) Occasionally

(d) Never