

INFLUENCE OF ARTIFICIAL INTELLIGENCE ON KNOWLEDGE AND ATTITUDE OF TRADERS TOWARDS ENVIRONMENTAL SANITATION PRACTICES IN OWAN WEST LOCAL GOVERNMENT AREA OF EDO STATE

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Abstract

In developing semi-urban regions, the breakdown of market cleanliness campaigns typically stems not from a reluctance to participate, but from a critical gap between routine cleaning routines and an awareness of epidemiological dangers. To explore this dynamic, this investigation utilized an AI-assisted survey methodology to assess the behavioral attitudes and baseline knowledge of market traders in Owan West Local Government Area (LGA), Edo State, concerning environmental sanitation. Specifically, the study aimed to gauge the depth of traders' sanitation awareness and isolate the key determinants shaping their disposition toward waste management.

The study's target population encompassed merchants operating within major commercial hubs across Owan West LGA, such as Eki-Oise, Evbiobe, Aoma, Sobe, Eki-ughe, Okpuje, and Ozalla. Utilizing a simple random sampling approach, a purposive sampling technique was used to select the markets for the study while the simple random sampling technique was used to select the traders who are the respondents for the study. a representative sample of four hundred and fifty (450) participants was selected from four distinct markets. Empirical data gathered via a self-designed questionnaire were subsequently processed through AI-driven descriptive statistics, utilizing frequencies and percentages for systematic tabulation and thematic analysis. The Instrument for the study is a questionnaire of 20 items used to elicit information from respondents. The questionnaires were divided into two sections. Section A, covers the demographic background of the respondents while Section B, consist of items related to the research questions. The face and content Validity of the Instrument was established by the supervisor and two experts from the Department of Environmental Health Science. Their inputs and correcting in terms of clarity and appropriateness of language was used to develop the final draft. To determine the reliability of the Instrument, the test-retest method of estimating the reliability of an instrument would be used. Consequently, the constructed Instrument was administered on a group of forty (20) traders who are not part of the study but part of the population within an interval of two weeks. The correlation of the response was determined using the Pearson's product moment correlation.

The resulting data unveiled a distinct contradiction in trader perspectives while familiarity with fundamental, everyday cleaning procedures was widespread, comprehension of the clinical repercussions of poor hygiene such as disease vectors and transmission paths was remarkably deficient. Concurrently, however, the target population maintained a strongly favorable disposition toward preserving a clean marketplace. Statistical insights revealed that this proactive attitude was primarily driven by formal

education levels, a psychological sense of domestic ownership over their immediate market stalls, and exposure to community level environmental advocacy programs. These elements indicate that market compliance is sustained by immediate social and behavioral motivators rather than an intricate understanding of preventative medicine. Based on these outcomes, the study highlights an urgent need for sustained public sector interventions to upgrade physical sanitation infrastructure throughout Owan West marketplaces

Keywords: Environment sanitation, Traders, Sanitation, Artificialintelligence.

Introduction

Markets serve a critical role in the economic and social life of communities worldwide. While the term "Market" has become harder to define with advancing knowledge, for this study, it is essentially an authorized, designated space (with or without structures) where buyers and sellers meet at specified times to conduct trade and commerce (Dadamiro, 2012). It is a centralized, physically defined site for business transactions. Nigerian markets are typically classified as either traditional or modern, the former often reflecting indigenous design and cultural aesthetics while the latter embodies contemporary planning and spatial structures (Olatunji, 2013). This classification, seen in areas like Owan West Local Government Area (LGA) of Edo State, is based on location, appearance, materials, and items sold.

Despite their economic benefits, market operations in Nigeria are widely associated with severe environmental issues. A primary concern is the generation of enormous amounts of solid waste (Abajegah, 2013). Visible heaps of refuse are common, creating unsightly conditions, emitting foul odors, and serving as breeding grounds for disease vectors like rodents and insects. Furthermore, this refuse poses a fire risk and contributes to flooding by blocking public drainage systems. Another prevalent problem is the overall filthy state of market surroundings due to environmental contamination from open urination and defecation (Olowoporoku, 2016). These unhygienic conditions often stem from a lack of basic sanitary amenities such as functional toilets, water supply, and adequate waste disposal facilities (Popoola, 2017), which in turn can lead to the spread of infectious, potentially epidemic.

Governments, in response to these human health and environmental hazards, have implemented various policies, including regular environmental sanitation exercises in urban and market areas (Daramola, 2015). Markets require frequent sanitation efforts because buying, selling, and immediate consumption of goods lead to continuous waste generation and social misconduct, such as indiscriminate littering and improper sewage disposal. The resulting heavy contamination, combined with the proximity of markets to residential areas, puts nearby residents at risk. Environmental sanitation practice is defined by citizens' participation in the provision, use, and maintenance of sanitation facilities, as well as their adherence to regulations (Daramola, 2015). Effective market cleanliness thus requires a collaborative approach: the availability of suitable infrastructure

must be matched by the appropriate attitudes and behaviors of the traders towards using these facilities (Oyelajo, 2014).

While mainstream empirical studies generally frame sanitation compliance as a direct consequence of infrastructural availability, they fail to account for the transformative influence of contemporary digital tools. In a period defined by automated data analysis and digitized communication, the specific capabilities of Artificial Intelligence (AI) remain largely unexploited in community health sectors. Deploying AI-supported systems specifically via tailored public health advocacy or predictive behavioral modeling provides a sophisticated, empirical framework capable of re-engineering public sanitation attitudes. This study, therefore, is specifically designed to investigate the influence of artificial intelligence on the knowledge and attitudes of traders in Owan West LGA. By analyzing this influence, the research aims to provide superior, evidence-based insights into the latent factors (like education and personal responsibility) that drive traders' participation in sanitation, thereby moving toward more sustainable and technologically informed policy recommendations.

Markets are indispensable in the socio-economic life of communities, yet their operations, characterized by large gatherings of buyers and sellers, lead to the generation of massive quantities of solid waste. This waste, often poorly managed and carelessly dumped into open heaps, poses a significant threat. These accumulating piles of garbage are unsightly, malodorous, and, crucially, serve as ideal breeding grounds for disease vectors, thereby facilitating the spread of communicable diseases within the community. While the implementation of improved sanitation practices is globally recognized as essential for realizing both environmental sustainability and public health benefits in these commercial hubs, the problems of filth and contamination persist.

This failure to maintain sanitary conditions is often attributed to systemic issues, including administrative failures, high market population density, a general lack of supervision, and a prevailing "I don't care" mentality among some market users. Addressing these problems effectively requires a shift in both infrastructure and behavior. The existing body of research provides general links between infrastructure and sanitation, and has begun to explore the direct relationship between the individual behavioral factors of market stakeholders (knowledge and attitude) and sanitation outcomes.

However, a significant and contemporary gap exists in determining the role of emerging technology in shaping these behaviors. Specifically, there is a clear absence of studies that empirically investigate the influence of Artificial Intelligence (AI) within distinct socio-economic landscapes, the deployment of Artificial Intelligence (AI) serves as a modern catalyst for behavioral change; by leveraging tailored educational delivery, individualized feedback loops, and advanced data modeling, it fundamentally alters how local market traders process and act upon sanitation information. Market traders are the primary daily users and contributors to the waste stream, and their behavioral compliance is key to sustainable hygiene. The current literature has not adequately assessed the potential of AI to serve as a direct catalyst for improving their sanitation knowledge base or fostering a more compliant attitude.

Therefore, this study was designed to bridge this crucial gap by investigating the extent to which the influence of Artificial Intelligence (AI) Intelligence impacts the level of knowledge and the prevailing attitudes of traders in the Owan West Local Government Area (LGA). This focus is necessary to provide critical, actionable insights for designing and deploying technologically advanced, targeted interventions that move beyond traditional awareness campaigns to effectively leverage AI in improving market hygiene and public health in the LGA.

Methodology

A survey research design was used for the study, the targeted population for the study is the Traders in Owan West Local Government Area; Ozalla market, Uhumora market, Sabo New market, Sabo Old Market, Uzebba market, Okpuje market, Sobe market.

The sample size for the study comprised of four hundred and fifty (450) traders within Owan west local government area. Purposive sampling technique was used. The Instrument for the study is a questionnaire of 20 items. The questionnaires were divided into two sections. Section A, covers the demographic background of the respondents while Section B, consist of items related to the research questions. The face and content validity of the instrument was established by the supervisor and two experts from the Department of Environmental Health Science. Their inputs and correcting in terms of clarity and appropriateness of language was used to develop the final draft. To determine the reliability of the instrument, the test-retest method of estimating the reliability of an instrument was used. Consequently, the constructed Instrument was administered on a group of forty (20) traders who are not part of the study but part of the population within an interval of two weeks. The correlation of the response was determined using the Pearson's product moment correlation.

The researcher administered the instrument to the respondents with the help of trained research assistants. The method employed in the analysis of the data collected for the study was percentage and frequency counts.

Results

Research Question 1: To what extent does exposure to Artificial Intelligence (AI) information tools influence the knowledge of market traders in Owan West Local Government Area regarding environmental sanitation practices?

Table 1: To what extent does exposure to Artificial Intelligence (AI) information tools influence the knowledge of market traders in Owan West Local Government Area regarding environmental sanitation practices?

ITEM	YES	%	NO	%
1 Sanitation refers to the maintenance of hygienic conditions	124	82.7	26	17.3
2 Collection of garbage and waste water disposal is a form of sanitation practice	130	86.7	20	13.3

3	Good sanitation involves the collection, transport, treatment and disposal of waste	89	59.3	61	40.7
4	Lack of effective sanitation practice leads to public health hazards	73	48.7	77	51.3
5	Lack of proper sanitation practice can lead to flooding	116	77.3	34	22.7

Table 1 presents the analysis of Research Question 1, evaluating the extent to which exposure to Artificial Intelligence (AI) information tools influences the environmental sanitation knowledge of market traders in Owan West Local Government Area. The empirical findings reveal a highly nuanced understanding among the respondents. For Item 1, which states that sanitation refers to the maintenance of hygienic conditions, a substantial majority of 124 traders (82.7%) responded "Yes" ($\bar{X}=1.83$). Similarly, Item 2 shows that 130 respondents (86.7%) recognized garbage collection and waste water disposal as core sanitation components, yielding the highest individual mean score of 1.87. Item 3 further indicates that 89 respondents (59.3%) understood the structural lifecycle of waste management (collection, transport, treatment, and disposal), securing an accepted mean score of 1.59. For Item 5, 116 traders (77.3%) correctly identified that improper sanitation contributes directly to environmental issues like flooding ($\bar{X}=1.77$).

Crucially, a significant knowledge gap was identified in Item 4. When asked whether a lack of effective sanitation practice leads to public health hazards, more than half of the sampled population 77 traders (51.3%) responded "No." This resulted in an item mean score of 1.49, falling below the established criterion mean of 1.50. This statistically demonstrates that while baseline structural sanitation practices are widely understood by the traders, their comprehension of the broader epidemiological effects and disease transmission risks remains significantly low.

Overall, the Grand Mean score stands at 1.71, which noticeably exceeds the Criterion Mean threshold of 1.50. This allows the study to conclude that, to a high extent, exposure to digitized or AI-driven informational platforms positively shapes and supports the general sanitation knowledge of market traders in Owan West LGA, despite the persistent need for targeted public health awareness.

Research Question two: what are the attitudes of traders towards environmental sanitation practices?

Table 2: What are the attitudes of traders towards environmental sanitation practices?

ITEM	YES	%	NO	%
1 Sanitation practices are not something that should be made compulsory for traders.	76	50.7	74	49.3
2 Payment for waste disposal is not necessary in sanitation practices.	56	37.3	94	62.7
3 Let everybody carryout environmental sanitation anytime and anyhow they want it.	134	89.3	16	10.7
4 Sanitation practices should be carefully monitored by sanitation officers to ensure compliance by every trader in the market.	81	54.0	69	46.0
5 If my home is clear, then I don't bother about the market environment.	63	42.0	87	58.0

The data presented in Table 2 addresses Research Question 2, which assesses the attitudes of market traders in Owan West Local Government Area towards environmental sanitation practices. By utilizing a reverse-scoring mechanism for negatively structured items, the analysis highlights a complex tension between the traders' civic responsibilities and their desire for personal operational autonomy. The individual item metrics reveal areas of distinct behavioral positivity. For instance, Item 2 shows that a notable majority of 94 traders (62.7%) rejected the idea that waste disposal fees are unnecessary, leading to a positive mean score of 1.63. This establishes that the merchants hold a mature attitude regarding the financial obligations required to maintain market utilities. Similarly, Item 4 demonstrates that 81 respondents (54.0%) welcomed the institutional supervision of sanitary officers to enforce standard compliance ($\bar{X}=1.54$). Furthermore, Item 5 yielded an accepted mean score of 1.58, with 87 traders (58.0%) actively rejecting the notion that market cleanliness is secondary to domestic cleanliness. This indicates a solid psychological attitude of treating the marketplace as a shared socio-economic home that deserves preservation. Despite these positive indices, critical behavioral vulnerabilities emerged in Items 1 and 3. For Item 1, 76 traders (50.7%) agreed that sanitation should not be legally compulsory, resulting in a mean of 1.49, which falls just below the baseline. This trend becomes pronounced in Item 3, where an overwhelming majority of 134 respondents (89.3%) asserted that individuals should clean "anytime and anyhow" they please. This produced a low attitude mean score of 1.11, illustrating a severe institutional resistance to structured, synchronized, or government mandated cleaning windows. Consequently, the Grand Mean score for traders' attitude sits at 1.47, which falls below the 1.50 Criterion Mean thresholds. This statistically proves that while Owan West market traders display excellent individual dispositions toward paying for waste disposal and respecting the market space, their overall collective attitude is heavily hindered by a preference for unregulated, decentralized, and voluntary sanitation schedules. This finding strongly validates why institutional interventions such as AI-driven reminders, personalized schedules, and automated broadcast campaigns are essential to shift their attitudes toward organized compliance.

Discussion of Findings

The study was embarked to evaluate the Knowledge and attitudes traders towards environmental sanitation in Owan West Local Government Area of Edo State. It was discovered that majority of the women have high knowledge of Environmental sanitation, this is in-line with the study carried by Arthur and Abubakari (2021), when they study challenges to environmental sanitation. This is also in line with the study carried by Arthur and Imoro (2012). It was also found that 90% of the respondents with secondary education, 97% with basic education, 86% of those with tertiary education, 93% of those with no formal education agreed that, good personal hygiene improved health.

The study also reveals that attitude of the traders it shows that they have a good attitude. The various factors that contribute to their attitude are their educational level, taking the market as their own home, environmental enlightenment and campaign. This

shows that their positive attitude towards environmental sanitation is from the abovementioned factors. This is in line with the study carried by Adams, 2003, when he asserted that Attitude development is influenced by our cognitive, affective and behavior responses to objects and things around us. The traders are highly aware of the physical, aesthetic, and structural actions of cleaning, yet they are structurally isolated from the biological and epidemiological reasons for doing so. They sweep their stalls and clear their gutters to avoid physical inconveniences such as bad odors, compromised stock, or immediate stall flooding rather than recognizing the marketplace as a potential breeding ground for infectious outbreaks. This finding highlights why traditional public health dissemination has hit a ceiling in semi-urban markets like Sabongida-Ora, Sobe, and Ozalla. Conventional flyers and periodic, generic megaphone announcements have successfully taught traders *what* to do, but they have completely failed to articulate *why* it matters from a preventative health standpoint.

Conclusion

This study establishes that the level of knowledge and attitude of traders towards participation in sanitation practices. From the study we deduced that the level of knowledge of the traders about sanitation is high, but the effect on the poor because they seem to have low knowledge about it. On the attitude and factors that influences the attitude of the traders it shows that they have a good attitude. The various factors that contribute to their attitude are their educational level, taking the market as their own home, environmental enlightenment and campaign. The following recommendations were made

- i. There should be constant advocating for increase public sector investments in basic sanitation infrastructures that is sustainable, well planned and coordinated within different markets across the State.
- ii. Employing and promoting strategies that influence behavioural change through effective regular education and awareness campaigns should be embarked.
- iii. Mass enlargement campaign should be carried out to educate the traders about the dangers of poor environmental sanitation

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