

ENVIRONMENTAL ADVOCACY IN PORT HARCOURT: EVALUATING RIWAMA'S COMMUNICATION TECHNIQUES

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Abstract

Environmental cleanliness is a critical determinant of public health, social well-being, and sustainable national development. Beyond aesthetics, it holds cultural and religious significance, symbolizing discipline, godliness, and respect for creation. Historically, societies have grappled with environmental degradation, from soil depletion in ancient Greece to industrial pollution in early modern Europe, highlighting a persistent challenge in human stewardship of natural resources. In contemporary Nigeria, rapid population growth and rural-urban migration have intensified waste management issues, with the country generating approximately 24 million tonnes of waste annually. Urban centers, particularly Port Harcourt, face severe challenges such as indiscriminate waste disposal, blocked drainage systems, and littered streets, all of which exacerbate public health risks, including malaria, typhoid, and bacterial infections. Addressing these challenges requires comprehensive awareness campaigns, community engagement, and effective policy implementation to foster environmental responsibility and enhance societal well-being.

Keywords: Environmental cleanliness, Waste management, Public health, Port Harcourt, Community awareness

1.0 INTRODUCTION

1.1 Background to the Study

Environmental cleanliness transcends mere aesthetics; it represents a fundamental component of public health, social well-being, and national development. Across diverse cultural and religious traditions, cleanliness holds sacred significance. In Christianity, it symbolizes godliness, discipline, and reverence for divine creation. A clean environment not only reduces disease prevalence but also enhances mental peace, social harmony, and community productivity (Cunningham & Cunningham, 2008).

The challenge of environmental degradation is not new. Plato lamented Greece's soil degradation due to reckless human activities, while King Edward I of England threatened capital punishment for coal burning in London in 1273. Similarly, John Evelyn complained about air pollution from fires and industrial waste in 1661 (Omoshue, 2009). These historical precedents underscore humanity's long-standing struggle with environmental stewardship. In contemporary Nigeria, exponential population growth and rural-urban migration have exacerbated waste management challenges, particularly in urban centers (Majumder & Karim, 2012). Nigeria currently generates 24 million tonnes of waste annually, exposing citizens to serious health risks including malaria, typhoid fever, and bacterial infections (*Vanguard*, 2017). Port Harcourt, the capital of Rivers State, exemplifies these challenges

with indiscriminate waste disposal, clogged drainage systems, and littered streets contributing to an unhealthy urban environment.

The absence of strategic planning and the proliferation of residential areas without corresponding expansion of social infrastructure have intensified water, sewerage, and waste management problems. Large volumes of waste coupled with crude disposal techniques have created environmental pollution that degrades both biotic and abiotic components of Nigeria's ecological systems (Makwara & Magudu, 2013).

Communication serves as a critical instrument for environmental management. According to Obuah and Okon (2017), the nexus between humanity and environment is embellished in the fulcrum of communication, which builds its essence on peace, equilibrium, and mutual understanding. Without effective communication, environmental management becomes a desolate endeavor.

Awosusi and Akindutire (2016) emphasized that the Nigerian populace, regardless of geographic location or socio-economic status, requires sensitization on effective solid waste management to achieve enhanced wellness and well-being. Without proper education, orientation, and public awareness, solid waste management becomes insurmountable. Sound environmental communication and education constitute preconditions for proper waste management.

1.2 Statement of the Problem

Despite the establishment of the Rivers State Waste Management Agency (RIWAMA) and implementation of various environmental campaigns, Port Harcourt continues to grapple with severe environmental challenges. Indiscriminate waste disposal, clogged drainage systems, and littered streets persist, suggesting that RIWAMA's communication strategies may be inadequate or ineffective.

The campaigns appear to have failed to adequately sensitize residents on proper waste management practices, resulting in a persistent culture of environmental neglect. Poor sensitization and inadequate community engagement have produced limited awareness about proper waste disposal and individual environmental responsibility. Furthermore, campaigns may not be tailored to the specific needs and concerns of diverse communities within the metropolis, limiting their impact. Previous studies (Davids, 2015; Elenwo, 2015; Davidson, 2011) examined RIWAMA's contributions to environmental challenges in Rivers State but focused primarily on waste management practices without adequate attention to communication technique implementation and effectiveness. This gap necessitates comprehensive investigation into how RIWAMA's communication strategies influence public awareness and behavioral change.

1.3 Objectives of the Study

This study examined the effectiveness of the Rivers State Waste Management Agency's (RIWAMA) communication techniques. Specifically, it sought to:

1. Investigate the communication techniques used by RIWAMA to convey environmental information to Port Harcourt residents
2. Identify the level of residents' awareness of RIWAMA campaign techniques

3. Examine the dominant communication channels RIWAMA uses to disseminate waste management information
4. Evaluate Port Harcourt residents' attitudes toward RIWAMA's waste management campaigns
5. Evaluate the types and frequency of waste disposal campaigns RIWAMA provides to residents

1.4 Research Questions

1. What communication techniques does RIWAMA use to convey environmental information to Port Harcourt residents?
2. What is the level of residents' awareness of RIWAMA campaign techniques?
3. What are the dominant communication channels RIWAMA uses to disseminate waste management information?
4. What are Port Harcourt residents' attitudes toward RIWAMA's waste management campaigns?
5. What types and frequency of waste disposal campaigns does RIWAMA provide to residents?

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

This study is anchored on two complementary theories: Development Media Theory and Diffusion of Innovation Theory.

2.1.1 Development Media Theory

Development Media Theory (DMT), introduced by Dennis McQuail in 1987, emerged from the concept of development communication. Gaining prominence in the 1980s, this theory advocates regulating press freedom to align with society's socio-economic requirements. It rejects dependency, foreign dominance, and unjust authoritarianism, emphasizing the utilization of local media and platforms to promote people's development needs (Patrick & Okoro, 2014).

McQuail (1987) posited that "the one thing which gives most unity to a development theory of the media is the acceptance of economic development itself (thus social change) and often the correlated nation building as an overriding objective. To this end, certain freedoms of the media and journalists are subordinated to their responsibility for helping in this purpose" (p.121). This theory recognizes the peculiar challenges facing Third World countries in Africa and Asia. According to proponents, the press in developing countries should highlight national development efforts, societal transformation, economic and social equality, popular mobilization for development, and improvements in living standards (Nsereka & Amannah, 2014).

2.1.2 Diffusion of Innovation Theory

Originally articulated by Everett Rogers in his 1962 seminal work *Diffusion of Innovation*, this theory explains how innovations spread through social systems. According to Rogers and Shoemaker (1971), diffusion is the process by which innovations spread to members of a social system, passing through distinct stages: awareness, interest, evaluation, trial, and adoption.

Rogers assembled empirical data demonstrating that technological innovations progress through predictable stages. First, most people become aware of them, often through mass media. Second, innovations are adopted by

innovators or early adopters. Third, opinion leaders learn from early adopters and trial the innovation. Fourth, if opinion leaders find the innovation useful, they encourage opinion followers. Finally, after most people adopt the innovation, laggards or late adopters make the change (Baran & Davies, 2007).

Rogers (1995) identified four major factors influencing innovation diffusion:

1. The innovation itself
2. How information about the innovation is communicated
3. Time
4. The nature of the social system into which the innovation is introduced

2.2 Conceptual Review

2.2.1 Communication

Communication has attracted numerous scholarly definitions. MacBride (1980) conceptualized communication as maintaining and animating life, serving as "the motor and expression of social activity and civilization; it leads people and peoples from instinct to inspiration through variegated processes and systems of enquiry, command and control; it creates common pool of ideas, strengthens the feeling of togetherness through exchange of messages and translates thought into action" (p.3).

Adler, Proctor, and Towne (2005) defined communication as a transactional process involving participants who occupy different but overlapping environments and create relationships through message exchange, much of which is affected by external, physiological, and psychological noise. Nwachukwu and Agbo (2014) described communication as the process by which individuals understand others and endeavor to be understood, emphasizing its dynamic nature that constantly changes and shifts in response to situations.

2.2.2 Communication Techniques

Communication techniques are plans for communicating information related to specific issues, events, or audiences for achieving given tasks. They serve as blueprints for information exchange when communicating with the public, stakeholders, and masses (Ochonogo & Innocent, 2015). Kibe (2014) noted that communication techniques are common in the business world, used as part of comprehensive business plans detailing how to communicate with various groups. Organizations may employ multiple techniques for different categories of stakeholders, such as clients, investors, competitors, or employees. Communication techniques articulate, explain, and promote visions and well-defined goals, creating consistent, unified voices that link diverse activities and goals in ways that appeal to partners or stakeholders.

2.2.3 Waste Management

Waste management encompasses processes ensuring proper disposal and evacuation of waste for environmental sustainability, public health, and societal development. It involves collecting, transporting, processing, managing, and monitoring waste materials. The term typically relates to materials produced by human activity, undertaken to reduce their effects on health, environment, or aesthetics (Adogu et al., 2015).

David (2015) stated that waste management's main objective is protecting public health against waste-related hazards and risks, and maintaining ecosystem services by preventing pollution of natural resources such as land, water, and air, as well as preserving environmental aesthetic quality.

2.3 Empirical Review

Okoro and Ogboeli (2025) evaluated RIWAMA's waste management practices based on perceptions and experiences of 420 Port Harcourt residents. Results showed that 58.8% of respondents live in rented properties, 42.4% reside in single rooms, and 46.7% are students, highlighting a predominance of low-income, high-density households. Significantly, 71.9% use polyethylene bags for primary waste storage, while 65.9% believe RIWAMA provides insufficient waste receptacles. The study concluded that RIWAMA's efforts are hindered by infrastructural limitations, poor policy enforcement, and weak stakeholder collaboration.

Obuah and Okon (2017) investigated environmental communication techniques of RIWAMA for sustainable waste management in Nigeria. Findings revealed commendably high awareness of RIWAMA campaigns by residents. Unfortunately, this awareness was not matched by corresponding compliance with waste disposal procedures.

Ekine et al. (2018) examined environmental refuse disposal management policies on municipal solid waste in Port Harcourt. Findings revealed that most residents are aware of the environmental agency managing solid waste but are unaware of state policies guiding solid waste or penalties for defaulters due to policy non-implementation.

3.0 METHODOLOGY

3.1 Research Design

This study adopted a descriptive survey research design, chosen due to the investigation's nature, which requires describing and analyzing relationships between variables to address the research problem.

3.2 Population of the Study

The population comprised two streams: all staff of Rivers State Waste Management Agency (1,500 according to RIWAMA Annual Report, 2019) and all Port Harcourt residents (1,450,165 according to National Population Commission of Nigeria).

3.3 Sample Size and Sampling Techniques

A sample of 384 was drawn from Port Harcourt's total population using the Krejcie and Morgan (1970) statistical table. Four RIWAMA staff were interviewed using purposive sampling technique. The sampling technique for questionnaire distribution was stratified random sampling across Mile 1, 2, 3, and 4, Aba Road, and the Township area.

3.4 Instruments for Data Collection

The researcher utilized questionnaires and interview guides for data collection. Three hundred and eighty-four (384) questionnaire copies were administered to respondents while interviews were conducted with purposively selected RIWAMA staff. The questionnaire contained 20 items with 4 items providing answers to each research question. The interview guide contained 6 questions derived from the research questions and targeted to RIWAMA management.

3.5 Validity and Reliability of the Research Instrument

Research instruments were given to a communication expert to authenticate that study instruments measure what they intend to measure, including project supervisors who vetted and realigned instruments to study objectives. The study used Cronbach Alpha reliability coefficient to arrive at reliability of 0.91, indicating the questionnaire's strength in fulfilling its purpose.

3.6 Method of Data Analysis

Data were analyzed using simple percentage and Weighted Mean Score (WMS) from a four-point Likert scale. Responses were weighted as: Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points, Strongly Disagree (SD) = 1 point. The WMS is 2.5. Any mean response equal to or more than 2.5 is positive (respondents agree) while any mean response less than 2.5 is negative. Data from interviews were analyzed using Constant Comparative Technique (CCT).

4.0 RESULTS AND DISCUSSION

4.1 Data Presentation

A total of 384 questionnaire copies were distributed, of which 383 were duly filled and retrieved with a 0.3% mortality rate. The retrieved 383 questionnaires formed the basis for data presentation and analysis.

4.2 Interview Data Analysis

Theme 1: Residents' Awareness of RIWAMA Campaigns

The communications officer observed that "awareness is relatively high, particularly in central areas like GRA, Rumuola, and D-Line... However, in the outskirts such as Rumuokoro, Eleme Junction, and parts of Diobu, awareness is lower." The senior PR officer noted that "most residents know about RIWAMA campaigns... however, awareness does not always translate to compliance." The field supervisor estimated awareness at "70 percent," explaining that "the challenge is attitude." The education coordinator attributed differences to access and outreach, remarking that "urban dwellers are more informed because they have access to the radio and internet."

Theme Summary: Awareness is widespread but uneven, with behavioral gaps remaining significant.

Theme 2: Dominant Communication Channels

All four staff emphasized radio's centrality. The communications officer said, "The most dominant channel we use is radio... We produce jingles and short talk shows." The PR officer added, "Town hall meetings, school visits, and marketplace engagements create more lasting impressions." The field supervisor highlighted face-to-face engagement: "We talk to people using megaphones and organize clean-up demonstrations." The education coordinator underscored youth involvement: "School debates, essay competitions, and environmental clubs have become strong dissemination tools."

Theme Summary: RIWAMA's campaigns depend on a blend of radio, interpersonal communication, and educational outreach.

Theme 3: Residents' Reaction

Public reactions vary widely. The communications officer stated, "In some neighborhoods, people are enthusiastic... in others, they show frustration." The PR officer pointed to tension during enforcement: "Residents become uncooperative when fined." The field supervisor explained, "Reactions can range from supportive to hostile... people appreciate our work once they see visible results." The education coordinator said, "Residents call into radio programs and make suggestions, but some return to poor habits after campaigns."

Theme Summary: Residents' engagement is positive but short-lived, influenced by enforcement and visible service delivery.

Theme 4: Frequency of Campaigns

The communications officer said, "We organize major campaigns about four times yearly." The PR officer added that "smaller awareness activities happen weekly." The field supervisor explained that "during the rainy season, we increase awareness," while the education coordinator stated that "school terms are used to schedule educational outreach."

Theme Summary: Campaigns follow a regular calendar but include continuous and seasonal sensitization drives.

Theme 5: Effectiveness and Challenges

The communications officer described techniques as "moderately effective," but highlighted that "old habits resurface once campaigns end." The PR officer emphasized funding limitations: "we could do more if we had better logistics and coordination." The field supervisor linked success to enforcement: "When residents see marshals, compliance improves." The education coordinator pointed to perception changes but added, "inadequate funding and poor follow-up limit success." **Theme Summary:** RIWAMA's communication improves awareness but long-term behavioral change is constrained by funding, logistics, and public attitude.

4.3 Questionnaire Data Analysis

Table 1: Communication Techniques Used by RIWAMA

Statement	SA	A	D	SD	Mean	Remark
RIWAMA uses clear communication techniques in conveying environmental information	4	24	260	95	1.8	Disagreed
The techniques adopted are effective in promoting awareness	119	65	141	58	2.6	Disagreed
RIWAMA tailors' techniques to suit different segments	28	3	184	168	1.7	Disagreed
Techniques encourage resident participation	104	18	93	168	2.1	Disagreed

This table assesses residents' perceptions of RIWAMA's communication techniques. Findings indicate that while the agency employs various techniques, residents largely believe these approaches are neither sufficiently clear nor tailored to different audience groups. The relatively low mean scores suggest gaps in how effectively RIWAMA's messages are communicated and understood, implying that the communication framework requires greater audience segmentation, improved message clarity, and a more participatory approach.

Table 2: Level of Residents' Awareness of RIWAMA Campaign Techniques

Statement	SA	A	D	SD	Mean	Remark
I am aware of RIWAMA's waste management campaigns	156	120	72	35	3.0	Agreed
I am familiar with goals and objectives of campaigns	128	134	81	40	2.9	Agreed
Campaigns have improved my knowledge of proper disposal	61	84	164	74	2.3	Disagreed
I regularly receive information about RIWAMA activities	48	69	174	92	2.2	Disagreed

This table explores residents' awareness levels of RIWAMA's environmental campaign techniques. Results show that most residents are aware of the agency's existence and general objectives, but many do not consistently receive updates or detailed information about its activities. Although awareness levels are fairly high, this knowledge does not always translate into informed action or continuous engagement with RIWAMA's programs.

Table 3: Dominant Communication Channels Used by RIWAMA

Statement	SA	A	D	SD	Mean	Remark
RIWAMA frequently uses radio and television	152	138	63	30	3.1	Agreed
RIWAMA effectively uses social media platforms	121	143	82	37	2.9	Agreed
RIWAMA organizes community meetings and outreach	74	82	141	86	2.4	Disagreed
Posters, billboards, and print materials are widely used	62	73	161	87	2.3	Disagreed

This table examines dominant communication channels used by RIWAMA. Findings reveal that radio and television remain the most widely utilized and trusted media for public sensitization. Social media also plays a growing role in engaging younger audiences, while community meetings, posters, and print materials appear less effective. The data suggest that RIWAMA's media mix leans heavily on mass communication rather than interpersonal interaction.

Table 4: Residents' Reactions to RIWAMA's Waste Management Campaigns

Statement	SA	A	D	SD	Mean	Remark
Residents comply with messages passed by campaigns	58	79	170	76	2.3	Disagreed
Campaigns influence my attitude towards proper disposal	69	83	159	72	2.4	Disagreed
Residents actively participate in programs	121	137	82	43	2.9	Agreed
Campaigns have changed my perception about cleanliness	63	84	157	79	2.3	Disagreed

This table focuses on residents' reactions to RIWAMA's waste management campaigns. Results show that although residents acknowledge RIWAMA's efforts, their compliance with campaign messages and participation in environmental programs remain inconsistent. The campaigns appear to influence attitudes modestly, but not enough to sustain long-term behavioral change.

Table 5: Frequency of RIWAMA's Waste Disposal Campaigns

Statement	SA	A	D	SD	Mean	Remark
RIWAMA organizes campaigns regularly	62	71	168	82	2.3	Disagreed
Frequency is sufficient to remind residents	54	77	169	83	2.3	Disagreed
I frequently observe campaigns in my area	49	69	182	83	2.2	Disagreed

Frequency has improved my disposal practices 56 72 178 77 2.3 Disagreed

This table evaluates the frequency of RIWAMA's waste disposal campaigns. Results show that most respondents believe campaigns are not conducted frequently enough to maintain continuous public awareness or reinforce behavioral change. The relatively low mean values suggest that while residents occasionally observe campaigns, the intervals between them are too long to sustain motivation and compliance.

4.4 Discussion of Findings

4.4.1 Communication Techniques Employed by RIWAMA

The interview and survey findings reveal that RIWAMA utilizes a combination of communication techniques designed to promote environmental consciousness, including radio broadcasts, television programs, school outreach initiatives, community mobilization efforts, and enforcement drives. However, survey results indicate that residents perceive gaps in these techniques, with the majority disagreeing that RIWAMA uses clear communication techniques (mean = 1.8).

Development Media Theory (McQuail, 2010) provides an interpretive lens for understanding this challenge. The theory holds that media and public communication should function as instruments for social development, with the state using media for education, enlightenment, and mobilization. RIWAMA's communication aligns with developmental principles, but it must move beyond transmission toward dialogue and community participation. Diffusion of Innovation Theory (Rogers, 2003) illuminates why awareness does not always lead to behavioral adoption. RIWAMA's messages may reach audiences (knowledge stage), but without persuasion and reinforcement, residents fail to internalize or adopt new waste disposal behaviors. The communication officer's admission that "attitude is the challenge" supports Rogers' argument that innovations spread only when social systems encourage trial and sustained practice.

4.4.2 Level of Residents' Awareness

The study's data reveal that residents' awareness of RIWAMA's campaign techniques is generally high but remains uneven across different Port Harcourt localities. Table 2 indicates that respondents agreed they were aware of RIWAMA's campaigns (mean = 3.0) and familiar with its goals (mean = 2.9). However, they disagreed that campaigns had improved their knowledge of waste disposal practices or that they regularly received information about RIWAMA's activities. These results reflect a shallow form of awareness—residents recognize the agency and its campaigns but lack deep understanding or sustained engagement with its objectives. This aligns with the communications officer's observation that "awareness is relatively high in central areas like GRA and Rumuola," but much lower in peripheral zones such as Diobu and Eleme Junction. In light of Development Media Theory, these findings reveal that RIWAMA's communication framework fulfills part of the developmental role of state communication—namely, the promotion of social and environmental awareness—but falls short of fostering participatory development. McQuail (2010) posits that media in developing societies must not only inform but also empower citizens to participate in solving collective problems.

4.4.3 Dominant Communication Channels

The analysis shows that radio and television remain the most dominant channels employed by RIWAMA. With a mean score of 3.1, respondents agreed that RIWAMA frequently uses radio and television for public sensitization. The interview data reinforce this pattern, with the communications officer noting, "The most dominant channel we use is radio; we produce jingles and short talk shows that air daily."

Social media emerged as a complementary platform with a mean score of 2.9, indicating moderate agreement on its effectiveness in reaching audiences, particularly younger residents. However, community meetings (2.4) and posters/billboards (2.3) showed lower effectiveness.

From the perspective of Development Media Theory, RIWAMA's media utilization aligns with the state's developmental role in mobilizing public awareness for social improvement. According to McQuail (2010), media in developing societies are expected to serve national goals by promoting education, mobilization, and unity. RIWAMA's reliance on radio and television reflects this developmental orientation.

The findings correspond with Diffusion of Innovation Theory, which identifies communication channels as critical determinants of how new ideas spread. Rogers (2003) explains that innovations diffuse more rapidly when mass media raise awareness, and interpersonal networks reinforce adoption. In RIWAMA's case, radio and television serve the awareness function, while town hall meetings and school programs function as interpersonal reinforcements.

4.4.4 Residents' Reactions to Campaigns

The data from Table 4 reveal a mixed pattern in residents' reactions to RIWAMA's waste management campaigns. Although respondents agreed that residents "actively participate in RIWAMA's waste management programs" (mean = 2.9), the majority disagreed that campaigns significantly influence their attitudes (mean = 2.4) or change perceptions about environmental cleanliness (mean = 2.3).

Interview findings enrich this understanding by highlighting the variability of public reactions across different communities. The communications officer observed that "in some neighborhoods, people are enthusiastic and even help organize clean-up exercises, but in others, especially where waste collection is irregular, people show frustration."

The senior public relations officer described the tension between awareness and enforcement, explaining that "residents become uncooperative when fined and often see our actions as punitive rather than corrective." Development Media Theory emphasizes the role of communication in mobilizing citizens through persuasion and education rather than coercion (McQuail, 2010).

4.4.5 Frequency of Environmental Campaigns

The findings from Table 5 reveal that residents largely perceive the frequency of RIWAMA's waste disposal campaigns as inadequate. Respondents disagreed across all statements, with mean scores ranging from 2.2 to 2.3, indicating that campaigns are not organized regularly enough to sustain awareness or behavioral reinforcement. Interview insights confirm this interpretation. The communications officer lamented that "campaigns are often tied to specific events like World Environment Day or government sanitation drives rather than continuous

community engagement." The field supervisor stated that "we would achieve more if campaigns were monthly or quarterly, but limited funding and logistics make this difficult."

From the perspective of Development Media Theory, RIWAMA's inconsistent outreach constrains its role as a developmental communication agent. Development communication assumes continuity—an ongoing dialogue between institutions and citizens aimed at long-term social change (McQuail, 2010). When campaigns occur sporadically, they lose the capacity to mobilize communities around shared environmental goals.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This study critically examined RIWAMA's communication techniques and environmental campaigns in Port Harcourt. The findings revealed:

1. RIWAMA employs a range of communication techniques such as jingles, radio talk shows, and community sensitization, but these are not sufficiently clear or tailored to different resident groups
2. Residents demonstrate moderate to high awareness of RIWAMA's campaigns and goals; however, this awareness does not always translate into consistent behavioral change or compliance
3. The most dominant communication channels are radio and television, while social media and interpersonal outreach remain less effectively utilized
4. Residents' reactions to RIWAMA's campaigns vary; many express initial enthusiasm but show limited sustained participation or attitudinal transformation
5. The frequency of RIWAMA's campaigns is inadequate, leading to declining visibility and weak reinforcement of environmental sanitation practices

5.2 Conclusion

The study concludes that RIWAMA's communication framework demonstrates institutional commitment to environmental sustainability but requires deeper community integration. While the agency has made progress in promoting awareness about waste management across Port Harcourt, the gap between knowledge and consistent behavioral change remains evident. This suggests that awareness alone cannot guarantee compliance unless supported by participatory communication approaches that empower residents to take ownership of environmental sanitation efforts. RIWAMA's efforts reflect the aspirations of Development Media Theory, which advocates for communication systems that serve societal goals. However, the top-down nature of the agency's campaigns limits dialogue and shared responsibility between RIWAMA and the public. For genuine environmental transformation, the agency must transition from persuasive information dissemination to community-based communication that fosters mutual trust, shared understanding, and feedback mechanisms.

The findings also underscore the relevance of Diffusion of Innovation Theory, highlighting that adoption of new sanitation behaviors depends on clear communication channels, continuous reinforcement, and credible opinion leaders. RIWAMA's communication could be more effective if it leverages social influence within local communities—such as religious leaders, youth groups, and market associations—to normalize waste management practices as collective civic duties.

5.3 Recommendations

Based on the findings, the study recommends that:

1. RIWAMA should move beyond top-down media announcements and adopt a two-way communication model that involves residents, community leaders, and youth groups in planning and executing campaigns
2. The agency needs to increase the frequency and consistency of its waste management campaigns throughout the year, ensuring continuous engagement rather than seasonal sensitization
3. Greater emphasis should be placed on community-based and interpersonal communication channels, such as town hall meetings, school programs, and grassroots mobilization, to complement radio and television outreach
4. RIWAMA should improve message clarity and audience segmentation by tailoring communication content to different demographic and socio-economic groups for better comprehension and relevance
5. Adequate funding, logistics, and institutional support should be provided to strengthen RIWAMA's communication units, enabling them to expand outreach, enhance visibility, and effectively evaluate campaign impact
6. The agency should establish community feedback mechanisms through resident associations, market leaders, and environmental ambassadors to ensure two-way communication and address local concerns promptly
7. RIWAMA should develop a communication calendar that integrates campaigns with cultural events, religious gatherings, and school programs to maximize reach and cultural relevance
8. The agency should conduct periodic evaluations of communication effectiveness using both quantitative and qualitative methods to identify gaps and adjust strategies accordingly

5.4 Contribution to Knowledge

This study contributes to knowledge by providing an in-depth understanding of how institutional communication techniques shape public awareness and participation in environmental management within urban Nigeria. By examining RIWAMA's approach in Port Harcourt, it bridges the gap between environmental policy implementation and public communication practices, revealing how media techniques and behavioral responses intersect in a developing urban context.

The study expands theoretical applications of Development Media Theory by demonstrating that effective environmental communication in developing societies requires not only media dissemination but also participatory engagement that empowers citizens as active contributors to sustainable waste management. It underscores that state-led communication must evolve from topdown information delivery to two-way interaction that fosters behavioral ownership and community accountability.

Through the lens of Diffusion of Innovation Theory, the research enriches understanding of how awareness, persuasion, and adoption stages manifest in environmental sanitation behavior. It highlights that awareness alone does not guarantee adoption, emphasizing the importance of continuous reinforcement, opinion leadership, and social networks in driving long-term behavioral change in waste management.

Empirically, the study adds to scholarship by providing both quantitative and qualitative evidence on how communication gaps, resource limitations, and irregular campaign schedules affect residents' responses to

government-led sanitation initiatives. The integration of field interviews and survey data offers a comprehensive model for assessing the impact of environmental campaigns in urban Africa, serving as a reference point for future studies on environmental communication and public engagement strategies.

Methodologically, the study demonstrates the value of mixed-methods research in communication studies, particularly in contexts where behavioral outcomes cannot be fully captured through quantitative data alone. The use of Constant Comparative Technique (CCT) for interview analysis alongside Weighted Mean Scores for survey data provides a robust framework for understanding both the breadth and depth of communication effectiveness.

Finally, the study contributes practical insights for policymakers, environmental agencies, and development communication practitioners seeking to design more effective public awareness campaigns. By identifying specific weaknesses in RIWAMA's communication framework—such as insufficient frequency, limited audience segmentation, and weak interpersonal engagement—the research provides actionable recommendations that can be adapted to similar environmental management contexts across Nigeria and other developing nations.

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