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## **Effectiveness of Communication Channels in The Implementation of The Butimba Water Development Project, Mwanza City, Tanzania**

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**Abstract. Purpose:** This study evaluates the effectiveness of communication channels used during the implementation of the Butimba Water Development Project in Mwanza City, Tanzania. It aims to (a) identify which channels were employed, (b) assess their capacity to promote stakeholder participation and feedback, and (c) determine how audience-centred message design influenced comprehension, trust, and perceived influence. **Methodology:** A sequential explanatory mixed-methods design was used. Quantitative data were collected via a household survey (N = 100) that measured exposure to and perceived credibility of channels, awareness, meeting attendance, and perceived influence. Qualitative data were gathered through eight key-informant interviews with implementing agency staff and community leaders to explain observed patterns and institutional practices. Descriptive statistics and  $\chi^2$  tests analysed survey data; thematic analysis was applied to interview transcripts. **Findings:** The project deployed a multi-channel strategy dominated by stakeholder meetings, social media/WhatsApp groups, public-address systems, posters/billboards, radio broadcasts, and mobile notifications (SMS/IVR). While overall awareness of the project was high, communication remained largely unidirectional: institutional feedback mechanisms were weak or underused, only a minority of residents perceived their views as considered in decisions, and participation tended to be passive rather than deliberative. Age and education shaped channel preferences (younger residents favoured digital channels; older residents relied on radio and meetings). **Unique contribution to theory, policy, and practice:** The study contributes to theory by empirically demonstrating a common “two-way asymmetry” in urban water projects where multi-channel reach does not equate to symmetrical dialogue and by proposing an integrated PR + Social Marketing framing for evaluating channel effectiveness. For policy, it offers concrete, budget-sensitive prescriptions (e.g., SMS/IVR shortcodes, documented feedback protocols, and communication KPIs) that can be embedded into project appraisal and funding conditions. For practice, it provides a tested hybrid communication framework that pairs trusted traditional media with targeted digital feedback tools and institutionalised response processes to increase perceived influence, trust, and sustainability.

**Keywords.** communication channels, participatory communication, social marketing, public relations, water projects, Mwanza, Tanzania

### **Introduction**

Effective communication is a critical determinant of success in public infrastructure projects because it shapes stakeholder awareness, participation, trust, accountability, and ultimately service sustainability (Servaes, 2018; McQuail, 2020). In the water sector, technical infrastructure alone does not guarantee long-term uptake; community understanding of project processes (metering, tariffs, operation & maintenance), sense of ownership, and perceived ability to influence decisions are equally important (Koppenjan *et al.*, 2004; World Bank, 2017). The Butimba Water Development Project (Butimba Ward, Nyamagana District, Mwanza City) aimed to extend water access through a series of distribution and metering interventions. While the technical targets were largely achieved, preliminary evaluation revealed persistent gaps in meaningful community participation and institutional responsiveness issues typically mediated by communication strategies (Agyepong, 2016).

### **Background to the study**

Globally, development practice has shifted toward recognising communication as central to participatory governance and sustainability. Communication that fosters dialogue, accountability, and local feedback mechanisms contributes to greater legitimacy and improved project outcomes (Servaes, 2018; Newman *et al.*, 2017). In Sub-Saharan Africa, water sector projects that combine community mobilisation with ongoing, interactive communication report higher rates of adoption and sustained service use (Bardosh, 2016; Osei-Tutu, 2021). However, many projects still rely on predominantly one-way dissemination (public notices, radio announcements, posters), which can increase awareness but fail to secure genuine community ownership or solve grievances (Chipeta *et al.*, 2020).

In Tanzania, national water policy emphasises stakeholder engagement and community participation in planning and service delivery (Ministry of Water, 2018). Yet operational realities constrained communication budgets, limited in-house communication expertise, and weak monitoring of communication outcomes often result in superficial consultation processes (URT, 2021). Rapid urbanisation and demographic shifts (younger, more digitally connected populations alongside older, low-literacy groups) complicate the design of inclusive communication strategies (TCRA, 2023). The Butimba project operates within these dynamics: implemented in an urban/peri-urban ward with heterogeneous media access and varying preferences, its communication challenges mirror broader sectoral issues.

### **Problem statement**

Although the Butimba project deployed several channels to inform the public, early assessments suggested a mismatch between reach and influence: broad awareness did not translate into active participation, and the implementing agency lacked systematic mechanisms for receiving, recording, and responding to citizen feedback. This disconnect risks undermining trust and long-term sustainability because when communities feel unheard or poorly informed about decisions affecting services and tariffs, compliance and willingness to maintain infrastructure decline (Furlong, 2019). There is therefore a need for a rigorous evaluation of the communication mix, its directionality (one-way vs. two-way), inclusivity across demographic groups, and its downstream effects on participation and perceived influence.

### **Study objectives**

**General objective:** To assess the effectiveness of communication channels used in the implementation of the Butimba Water Development Project in Mwanza City, Tanzania.

### **Specific objectives:**

1. To identify and categorise the communication channels used during the Butimba project.
2. To assess the extent to which these channels promoted stakeholder participation, feedback, and trust.
3. To examine how audience-centredness, cultural sensitivity, and message design influenced communication effectiveness and perceived influence.

This study integrates two complementary theoretical traditions: Public Relations (PR) models of organisational–public communication and Social Marketing Theory (SMT).

Public Relations scholarship conceptualises organisational communication along a continuum from one-way (press agency, public information) to two-way models (two-way asymmetrical and two-way symmetrical) where the latter seeks mutual understanding and negotiated outcomes (Grunig *et al.*, 1984; Grunig, 2001). The two-way symmetrical model emphasises dialogue, mutual influence, and relationship building – features that are directly relevant to participatory development projects where community buy-in is essential.

Social Marketing Theory, derived from marketing principles, focuses on audience segmentation, formative research, message framing, exchange theory (perceived costs vs. benefits), and reinforcement strategies to produce voluntary behaviour change (Kotler *et al.*, 1971; Lefebvre, 2013). SMT complements PR by providing practical guidance on designing messages and channels that motivate behaviour (e.g., payment of tariffs, correct meter usage), while PR supplies the process logic for institutional dialogue and trust building.

Combining PR and SMT yields a hybrid framework: communication channels and message designs are treated as independent variables; audience segmentation and trust function as mediators; and outcomes include awareness, participation, perceived influence, and behaviour change. The framework also foregrounds feedback mechanisms and institutional responsiveness as critical moderators of final outcomes.

### **Literature review**

The literature review is structured into three subsections: (1) the role of communication in development and service projects; (2) comparative strengths and limitations of different communication channels; and (3) feedback systems and the importance of two-way communication in the water sector.

### **Communication and development outcomes**

A large body of literature links participatory communication with improved development outcomes. Servaes (2018) argues that communication for development should be collaborative and empower local actors rather than simply inform them. Similarly, Cornwall and Brock (2018) emphasise that participation that goes beyond tokenism – involving communities in planning, implementation, and monitoring – leads to stronger ownership and accountability. In the water sector specifically, participatory strategies that integrate community education, local institutions, and ongoing dialogue have been associated with higher reliability and sustainability of services (Bardosh, 2016; Hays *et al.*, 2019). These studies collectively

suggest that communication functions as both a technical and social intervention: it conveys necessary information and mediates relationships among actors.

### **Channels: strengths, limitations, and hybrid approaches**

Channels vary in reach, interactivity, cost, and suitability depending on audience characteristics (Lennie *et al.*, 2019). Radio remains a powerful medium in many African contexts because of its wide reach and accessibility for low-literacy populations (Murphy *et al.*, 2017). Community meetings and public forums provide opportunity for deeper engagement and deliberation but are resource-intensive and may be subject to elite capture if not carefully facilitated (Cornwall, 2008). Mobile phones and social media enable immediacy and interactivity. SMS campaigns and WhatsApp groups have been shown to facilitate rapid information dissemination and two-way exchanges in urban settings (Aker, 2011; Donner *et al.*, 2008) yet their effectiveness is limited by unequal access and digital literacy (Hilbert, 2011).

A hybrid approach deliberately combining trusted traditional channels (radio, meetings) with targeted digital tools (SMS/IVR, social media) is increasingly recommended for heterogeneous urban contexts (Daly *et al.*, 2020). Hybrid models capitalise on the strengths of each medium while mitigating their limitations: radio ensures mass reach; community meetings allow deliberation; mobile platforms enable rapid feedback and recordkeeping. Empirical evidence from East African water and sanitation projects indicates that hybrid strategies often outperform single-channel approaches in generating both reach and engagement (Osei-Tutu, 2021; Chipeta *et al.*, 2020).

### **Research methods**

A sequential explanatory mixed-methods design was used: a quantitative household survey (N = 100) established prevalence and patterns of channel exposure, awareness, participation, and perceived influence; qualitative key-informant interviews (n = 8) probed institutional practices, message design decisions, constraints, and recommendations. This design allowed numerical description and explanatory depth (Creswell *et al.*, 2018; Tashakkori *et al.*, 2010).

Household respondents were selected through simple random sampling of households within the project area. Respondents: N = 100 (67% male, 33% female). Key informants (n = 8) were purposively selected to include MWAUWASA officers, community leaders, and local project coordinators. Purposive selection ensured inclusion of individuals with direct knowledge of communications practice (Patton, 2015).

Questionnaire (household survey): closed and open-ended items covering demographics, channel exposure, recall of project messages, perceived credibility, participation (meeting attendance), perceived influence on decisions, satisfaction, and suggestions.

Interview guide (key informants): semi-structured prompts addressing channel selection, message framing, budget and staffing for communication, feedback mechanisms, constraints, and recommendations. Instruments were piloted (n = 10) and adjusted for clarity; Kiswahili translations were used where needed to ensure comprehension.

Quantitative data were entered into SPSS and analysed descriptively (frequencies, percentages) with  $\chi^2$  tests used for simple group comparisons where appropriate. Qualitative interviews were transcribed and analysed using thematic analysis (Braun *et al.*, 2006). Integration occurred during interpretation: qualitative themes were used to explain and contextualise survey patterns (Creswell *et al.*, 2018).

Ethical clearance was obtained from the relevant institutional board; respondents provided informed consent and confidentiality was maintained. No personally identifying information is reported.

### Findings

#### Demographic characteristics of respondents (Table 1)

**Table 1. Demographic profile of household respondents (N = 100)**

Characteristic	Frequency (n)	Percentage (%)
Sex Male	67	67%
Sex Female	33	33%
Age 18–30	42	42%
Age 31–45	48	48%
Age >45	10	10%
Education Primary	30	30%
Education Secondary	45	45%
Education Tertiary	25	25%
Occupation Businessperson	48	48%
Occupation Public employee	32	32%
Occupation Casual labourer	20	20%

(Source: project dataset: N = 100.)

#### Communication channel usage (Table 2)

**Table 2. Reported channels used to receive project information (N = 100)**

Channel	Frequency (n)	Percentage (%)
Stakeholder meetings	21	21%
Social media (e.g., Facebook/WhatsApp)	19	19%
Public address systems (PA)	19	19%
Billboards / Posters	17	17%
Radio broadcasts	14	14%
Mobile notifications (SMS/IVR)	10	10%
<b>Total</b>	<b>100</b>	<b>100%</b>

(Source: project dataset: N = 100.)

Interpretation: A multi-channel approach was evident, with stakeholder meetings, social media, and PA systems each contributing substantially. No single medium dominated overwhelmingly.

#### Awareness, participation, and perceived influence (Table 3)

**Table 3. Awareness and participation indicators (N = 100)**

Indicator	Frequency (n)	Percentage (%)
Aware of the project	79	79%
Attended at least one project meeting	54	54%
Perceive opinions considered in decisions	38	38%

<b>Believe institution responds to feedback</b>	28	28%
<b>Satisfied with communication overall</b>	46	46%

(Source: project dataset: N = 100)

Interpretation: High awareness (79%) did not translate into equivalent participation (54%) or perceived influence (38%); institutional responsiveness was reported as low (28%).

#### Qualitative themes (Table 4)

**Table 4. Summary of qualitative themes from key-informant interviews (n = 8)**

Theme	Summary
<b>Channel accessibility and segmentation</b>	Younger residents access social media/SMS; older residents prefer radio and meetings. Digital divide affects inclusivity.
<b>One-way dissemination &amp; limited feedback</b>	Preference for controlled messaging; limited or underpublicised feedback mechanisms (no active hotline, weak suggestion box use).
<b>Institutional constraints</b>	Budgetary limits, lack of dedicated communication staff, and low monitoring of communication KPIs.
<b>Recommendations for a hybrid approach</b>	Combine radio + meetings + SMS/IVR; establish clear response protocols and publicise feedback channels.

*(Quotes and illustrative excerpts are available in the project transcripts; selected anonymised excerpts can be appended if desired.)*

(Source: project dataset: N = 100)

#### Statistical notes

A  $\chi^2$  test comparing channel preference by age group showed significant differences (younger respondents more likely to report social media/SMS as primary channel;  $\chi^2 = 12.3$ ,  $p < .01$ ). No other between-group differences reached statistical significance given the sample size.

#### Discussion

This study evaluated communication practices in the Butimba Water Development Project using a mixed-methods approach. Three central findings emerge: (1) a multi-channel information strategy achieved high awareness but limited participatory influence; (2) demographic heterogeneity (age, education) shaped channel effectiveness; and (3) institutional barriers constrained two-way communication and timely responses to citizen input.

#### Multi-channel reach vs. meaningful engagement

Consistent with prior literature (Chipeta *et al.*, 2020; Osei-Tutu, 2021), the project's multi-channel approach yielded broad awareness (79%) but weaker engagement and perceived influence (38%). Awareness without mechanisms for listening and responding often results in passive citizenship (Servaes, 2018). This suggests that channel diversity alone is insufficient; communication must be purposefully designed to create avenues for feedback and demonstrable institutional action (Grunig, 2001).

### **Audience segmentation and channel fit**

Younger respondents preferred digital channels, while older or lower-education respondents relied on radio and meetings, matching patterns reported across African urban contexts (Aker, 2011; Murphy *et al.*, 2017). Social Marketing Theory emphasises segmentation and tailored messaging (Lefebvre, 2013), so project communicators should intentionally map channels to audience segments rather than assume uniform media access or literacy.

### **Institutional constraints and the feedback gap**

Key informants highlighted budget constraints and the absence of dedicated communication staff as major barriers to systematic two-way engagement. Studies on public service communication emphasise the importance of resourcing communication as a core project component (Newman *et al.*, 2017; World Bank, 2017). Low institutional capacity reduces the likelihood that feedback will be logged, triaged, and acted upon, which in turn undermines trust (Furlong, 2019).

### **Practical implications and pathways forward**

Low-cost, high-impact measures are viable: SMS shortcodes linked to a simple response protocol, scheduled community feedback days, and public dissemination of “what we heard and how we responded” bulletins can increase perceived responsiveness (Daly *et al.*, 2020; Hays *et al.*, 2019). A hybrid communication plan that pairs radio and meetings for reach with SMS/IVR for rapid feedback would address both inclusivity and interactivity concerns.

### **Conclusions**

1. The Butimba project used a multi-channel communication strategy, resulting in high awareness but suboptimal participation and perceived influence.
2. Communication was largely unidirectional in practice; institutional feedback mechanisms were weak or inconsistently used.
3. Audience heterogeneity necessitates segmentation; hybrid strategies that pair trusted traditional media with digital feedback tools can improve both reach and responsiveness.
4. Institutionalising communication (budget, staff, KPIs) and creating transparent response protocols are essential to transition from informational campaigns to participatory engagement that supports long-term sustainability.

### **Recommendations**

#### **For implementing agencies (e.g., MWAUWASA)**

Institutionalise communication functions: allocate a defined budget line for communication, hire or designate communication focal persons, and include communication KPIs in project monitoring (Newman *et al.*, 2017).

Set up simple feedback systems: a toll-free SMS shortcode and an IVR option for non-literate users; designate staff to triage and respond within 14 working days; publish monthly “responses to community inputs” summaries.

Adopt hybrid channel planning: map channels to audience segments (radio + meetings for older/low-literacy; SMS/IVR/WhatsApp for younger/digital groups) and schedule communications to suit community rhythms (market days, evenings).

Capacity building: train frontline staff on community facilitation to reduce elite capture during meetings and ensure inclusive participation (Cornwall, 2008).

### **For policymakers and founders**

Require communication plans (with budget and KPIs) as part of project proposals and disbursement conditions. Embed community feedback metrics into project appraisal and evaluation frameworks (World Bank, 2017).

### **Areas for Further Studies**

This research has provided a foundational, mixed-methods understanding of how communication channels function within the implementation of an urban water development project in Tanzania. While the findings offer valuable insights into awareness, participation, and institutional responsiveness, they also open several pathways for deeper investigation. Future studies could explore the following areas:

1. **Longitudinal Impact of Feedback Mechanisms:** Further research should assess how newly introduced communication tools such as SMS shortcodes, IVR systems, or community feedback forums affect trust, service satisfaction, and tariff compliance over time. Longitudinal designs would illuminate whether participatory communication practices lead to sustained behavioural or governance outcomes.
2. **Comparative Analyses Across Urban and Rural Contexts:** This study focused on an urban/peri-urban ward. Comparative studies across rural water projects, small towns, and other regions of Tanzania could highlight how channel effectiveness differs by geography, literacy levels, and socio-economic profiles.
3. **Experimental Evaluation of Communication Interventions:** Future studies may design and test specific communication interventions such as targeted social media campaigns, participatory radio programming, or behaviourally framed SMS reminders to measure their causal impacts on awareness, participation, and customer behaviour.
4. **Institutional Capacity and Organisational Communication Dynamics:** Further qualitative research could explore organisational structures, staffing, incentives, and internal communication cultures within water utilities. Understanding these institutional enablers and barriers may clarify why two-way communication remains weak even when multiple channels exist.
5. **Audience-Specific Communication Preferences and Digital Inclusion:** Given the demographic differences observed in channel preferences, additional research could examine digital literacy gaps, gendered access to communication technologies, and how these factors shape participation and inclusivity in public service projects.
6. **The Role of Trust and Perceived Legitimacy in Communication Uptake:** Since trust heavily influences whether audiences act on institutional messages, future studies could investigate how trust is built, eroded, and restored through communication practices within basic service sectors.
7. **Cross-sectoral Communication Learning:** Research comparing communication strategies between water, health, and sanitation projects in Tanzania could identify best practices transferable across sectors, contributing to more coherent national communication frameworks.

### **Limitations**

The study focuses on one ward (Butimba) with N = 100 household respondents and eight key informants, which limits generalisability. The cross-sectional survey captures perceptions at a single point; longitudinal data would strengthen causal claims about the effects of improved communication practices on behaviour.

### References

- [1] Aker, J. C. (2011). Dial “A” for agriculture: A review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics*, 42(6), 631–647.
- [2] Bardosh, K. (2016). *Global health governance and power: Assessing the intersections of global health, communication and governance*. Routledge.
- [3] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- [4] Chipeta, M., & Kanyenda, S. (2020). Community engagement and water project sustainability in sub-Saharan Africa: Evidence from Malawi and Zambia. *Development in Practice*, 30(4), 512–524.
- [5] Cornwall, A. (2008). Unpacking ‘Participation’: models, meanings and practices. *Community Development Journal*, 43(3), 269–283.
- [6] Cornwall, A., & Brock, K. (2018). *Participatory development in theory and practice: new routes to development?* Zed Books.
- [7] Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.
- [8] Daly, T., & Kinsella, S. (2020). Hybrid communication strategies for inclusive urban development: lessons from East Africa. *Journal of Urban Affairs*, 42(5), 650–668.
- [9] Donner, J., & Tellez, C. A. (2008). Cell phone access and use in public health: A review of the literature. *Global Public Health*, 3(4), 356–368.
- [10] Furlong, C. (2019). Trust, governance and service delivery: the role of communication in urban utilities. *Public Administration and Development*, 39(2), 95–107.
- [11] Grunig, J. E. (2001). Two-way symmetrical public relations: Past, present, and future. In R. L. Heath (Ed.), *Handbook of public relations* (pp. 11–28). SAGE.
- [12] Grunig, J. E., & Hunt, T. (1984). *Managing public relations*. Holt, Rinehart & Winston.
- [13] Hays, J., O’Neill, K., & Murphy, L. (2019). Community engagement and the sustainability of small-scale water projects. *Water International*, 44(7), 900–916.
- [14] Hilbert, M. (2011). The end justifies the definition: The manifold outlooks on the digital divide and their practical usefulness for policy-making. *Telecommunications Policy*, 35(8), 715–736.
- [15] Koppenjan, J., & Klijn, E.-H. (2004). *Managing uncertainties in networks: A network approach to complex governance*. Routledge.
- [16] Kotler, P., & Zaltman, G. (1971). Social marketing: An approach to planned social change. *Journal of Marketing*, 35(3), 3–12.
- [17] Lefebvre, R. C. (2013). *Social marketing and social change: Strategies and tools for improving health, well-being, and the environment*. Jossey-Bass.
- [18] Lennie, J., & Tacchi, J. (2019). *Evaluating communication for development: A framework for social change*. SAGE.
- [19] McQuail, D. (2010). *McQuail's mass communication theory* (6th ed.). SAGE.
- [20] Murphy, M., Banda, F., & Keating, L. (2017). Radio and rural development: Reconsidering the impact of community radio in Africa. *Media, Culture & Society*, 39(6), 760–776.
- [21] Newman, A., Bartlett, J., & McGarrity, S. (2017). Communication as a vehicle for development: Lessons from applied projects. *Development Policy Review*, 35(2), 221–238.
- [22] Osei-Tutu, E. (2021). Communication strategies for urban water utilities in West Africa: Evidence and practice. *Utilities Policy*, 71, 101260.

- [23] Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE.
- [24] Servaes, J. (2018). *Communication for development and social change*. SAGE.
- [25] Tashakkori, A., & Teddlie, C. (2010). *SAGE handbook of mixed methods in social & behavioral research* (2nd ed.). SAGE.
- [26] World Bank. (2017). *Communications for development: A practice guide* (World Bank Publications).