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Abstract

This project examined how internal communication breakdowns impact emergency management operations during environmental disasters. Using a case study of two merged disaster operations, data was collected through 23 interviews across roles including logistics, IT, and leadership. Findings revealed common issues such as inconsistent messaging, vague directives, and operational silos, all of which delayed response efforts and weakened public trust. A qualitative coding analysis identified key patterns and improvement areas. The consequences of poor communication extended beyond internal inefficiencies, directly affecting the public. These insights are applicable across sectors where coordination is critical. One major recommendation is the use of After-Action Reviews to detect failures and drive continuous improvement. The final recommendation is a recurring Communication Improvement Cycle—assess, implement, review, and improve—designed to promote clarity, coordination, and learning across teams.

Introduction

Effective communication is paramount in emergency management, particularly during environmental disasters such as hurricanes, floods, and chemical spills. In these high-stress scenarios, the ability of emergency management teams to coordinate swiftly and accurately can significantly influence the outcome of response efforts. Miscommunication within these teams can lead to inconsistent public messaging, delayed responses, and a loss of public trust. In Puerto Rico, the challenges of effective communication are compounded by the island's vulnerability to frequent environmental disasters and the complexities of coordinating among various agencies and stakeholders. The absence of standardized communication protocols and the reliance on multiple, often overlapping, chains of communication have historically impeded the efficiency of emergency responses. These issues not only affect the internal dynamics of emergency management teams but also have far-reaching consequences for the public, including misinformation and diminished trust in authorities.

The objective of this project is to improve the effectiveness of emergency response operations in Puerto Rico by strengthening internal communication within emergency management teams. This includes reducing uncertainty, enabling managers to provide clear and specific instructions for their staff, and shortening the time required to deliver accurate information to the public. The subsequent sections of this document delve into a literature review of communication challenges in emergency management, detail the methodology employed in this study, present the results case analyses and interviews of experienced personnel, and outline areas for improvement with potential solutions. The conclusion will summarize the key findings and offer recommendations to encourage organizations to continuously assess communication practices, implement changes, review outcomes, and make informed adjustments.

Literature Review

Institutional fragmentation and poor coordination among emergency agencies increase disaster vulnerability by creating duplicated efforts, misaligned messaging, and slower responses [1]. During complex emergencies, overlapping roles and lack of unified command cause information bottlenecks and delays [2]. Inconsistent public messaging worsens the situation—conflicting instructions from agencies erode trust and delay action [3]. Clear, culturally appropriate communication is essential. Simplifying language, offering multilingual content, and using familiar channels improve public understanding and engagement [4]. This is especially vital in Puerto Rico, where some communities face literacy challenges and limited access to traditional media. Technological tools like decision-support systems and real-time data platforms improve coordination and situational awareness [3].

These systems enable rapid information sharing, aligning decisions under pressure. Yet, their use in Puerto Rico remains limited due to infrastructure gaps, lack of training, and low digital access. Improving training and digital capacity can help overcome these obstacles. When implemented effectively, these technologies support consistent, timely communication with both internal teams and the public.

Analysis Approach

A mixed-method approach was adopted, combining interviews and case study review. This methodology was appropriate for several reasons: it allowed for contextual understanding of the operational environment, it provided depth through firsthand accounts from affected staff, and it supported pattern recognition across different sections and roles. The two strategies (interviews and case study analysis) complemented each other by offering both subjective perceptions and concrete operational insights.

The case selected involved the operational transition between two disaster recovery missions. It was chosen based on three criteria: (1) involvement of multidisciplinary emergency management teams, (2) evidence of operational overlap or staff merging, and (3) documented delays or confusion attributed to communication issues. This transition represented a unique scenario where employees, despite performing similar duties, suddenly merged under a single operation without consistent or centralized communication. This case was chosen because it presented a clear example of overlapping roles, fragmented information channels, and fluctuating directives. It allowed for a detailed observation of real-time communication breakdowns and their consequences, both for the personnel involved and the public.

To capture a broad perspective, 23 interviews were conducted with staff across various roles: logistics, facility managers, IT, section chiefs, and supervisors. These participants were selected to represent both leadership and frontline perspectives. The goal was to identify recurring challenges, gather real-world feedback, and document internal responses to the communication gaps experienced. Interview questions were designed to extract qualitative insights into: Staff understanding of their roles before and after the transition; How directives were communicated and updated; The impact of unclear communication on decision-making and task execution.

The data was analyzed using a qualitative coding method, which allowed for the categorization of themes based on frequency and relevance. Notes from interviews were coded according to key categories such as: Areas for Improvement (AFIs), Potential Best Practices (PBPs) and Observed patterns of miscommunication. The interview data was triangulated with documentation from the transition reports and internal memos to validate findings and reduce bias.

The interview analysis focused on identifying how internal miscommunication contributed to inconsistent messaging, job ambiguity, and delays during the operational transition. This analysis aimed to reduce uncertainty, guide managerial communication, and improve the flow of information to customers.

Results

Interview analysis revealed systemic communication challenges that affected both internal performance and public outcomes. Communication Delays and Fragmentation: Staff reported delays in receiving critical updates, often through informal channels. Many learned of changes only after decisions were made, leading to confusion, rework, and shifting task priorities. Inconsistent Leadership Messaging: Employees expressed dissatisfaction with conflicting directives from leadership and unclear expectations. Instructions changed frequently without context, resulting in misalignment between teams. Role Confusion During Operational Transition: The merger of two disaster operations created uncertainty. Employees were reassigned without guidance or training, causing duplicated efforts and delays in service delivery. The most frequently cited issues are illustrated in Figure 1.

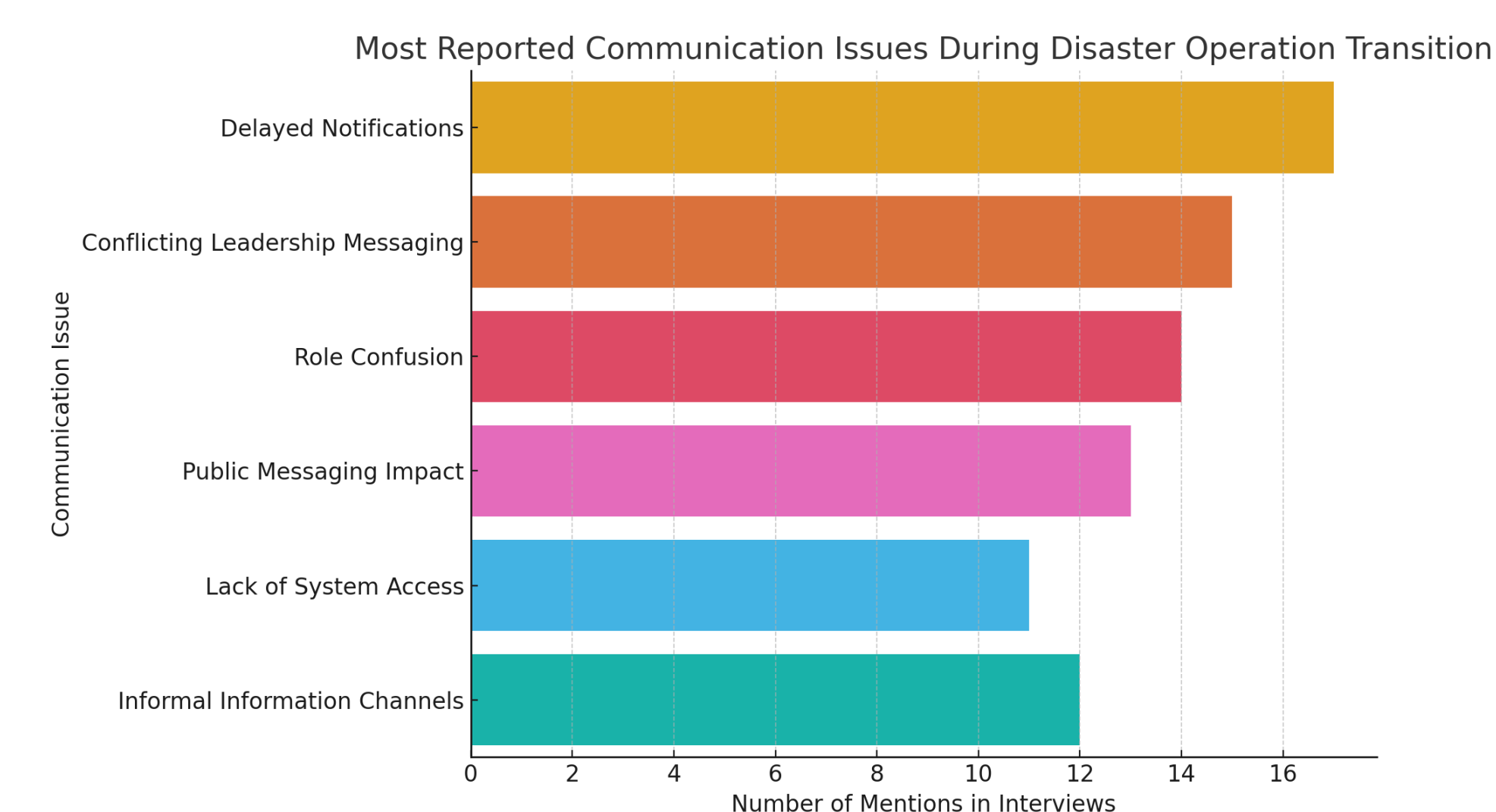


Figure 1
 Most frequently reported communication issues.

Observed Best Practices included the use of experienced personnel, peer-to-peer briefings during transitions, and centralized documentation, all of which improved continuity. Patterns of Breakdown emerged at three levels: Strategic (leadership-to-staff) Operational (team-to-team) Technical (system-to-user) These issues contributed to workflow delays, rework, and increased staff burnout, validating the project's core finding: ineffective internal communication disrupts operations and reduces the quality of public service.

Conclusions

This project examined the vital role of internal communication in emergency management operations, revealing how breakdowns in leadership, coordination, and systems directly affected team performance and public service delivery. The case study highlighted how unclear directives and misaligned efforts disrupted workflows and delayed response efforts. Although rooted in emergency management, these findings apply broadly across sectors like manufacturing and construction, where interdependent teams often operate without visibility into each other's roles. This lack of coordination creates inefficiencies and missed opportunities. A key takeaway is the value of After Action Reviews (AARs) as a tool to identify communication failures and guide improvement. Without structured reflection, organizations risk repeating avoidable errors. Figure 2 illustrates the continuous process proposed to enhance communication gaps, implement changes, and conduct structured reviews.

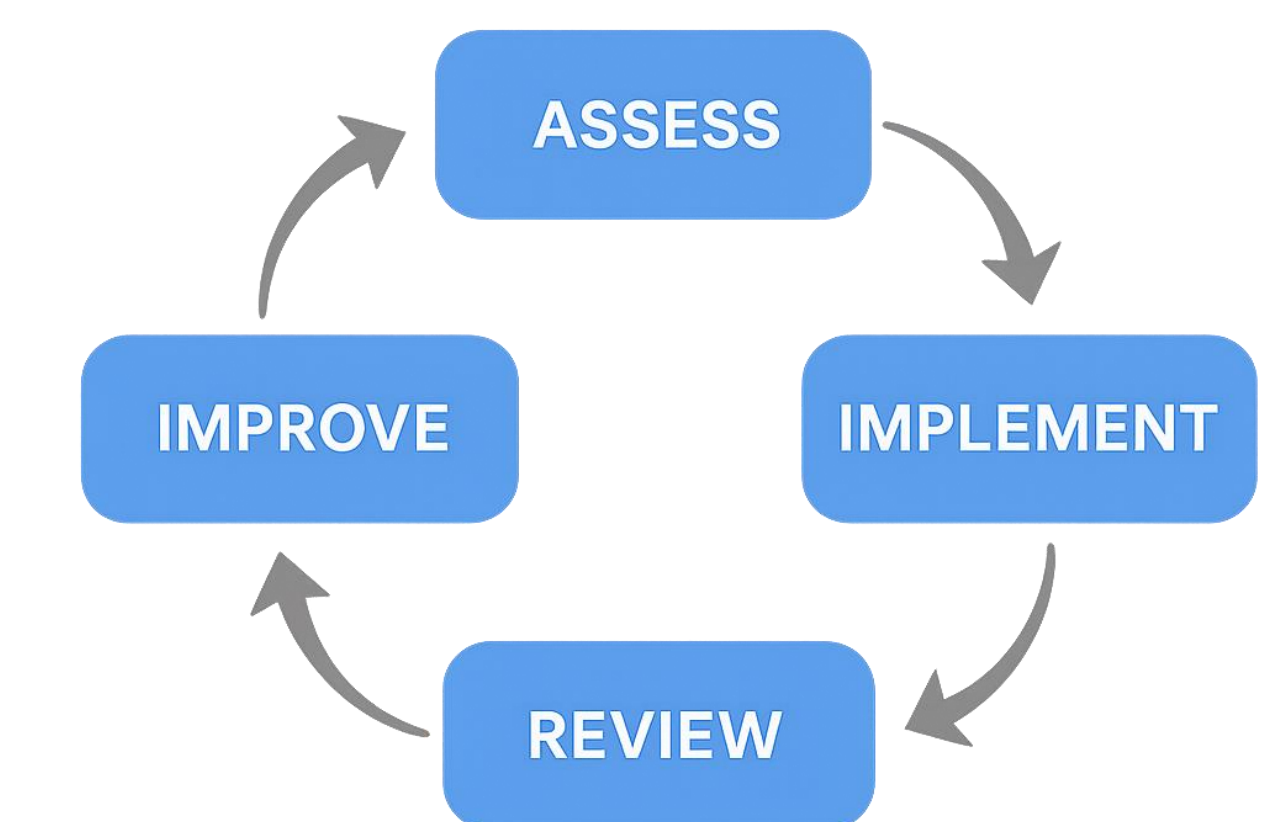


Figure 2
 Continuous Communication Improvement Cycle

The Communication Improvement Cycle recommends: (1) setting clear protocols, (2) centralizing updates, and (3) institutionalizing AARs. These steps address systemic gaps and support stronger, more adaptable communication practices across any complex operation.

References

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