Bridging Traditional and Digital Communication in the Age of Uncertainty: Reconsidering Organizational Communication Strategies Through the Lens of Ambiguity Management

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***Abstract*—Effective internal communication is critical for the success of organizations managing large-scale and strategically important projects. This study investigates communication practices within a major national public-sector enterprise responsible for overseeing complex construction and infrastructure initiatives. An on-site empirical survey was conducted, combining structured questionnaires and manual content analysis to evaluate eight key communication tools across three dimensions: usage frequency, organizational training and support, and perceived ambiguity. Thirty-one valid responses were collected. The results reveal that face-to-face communication and group meetings are perceived as the most effective tools for reducing ambiguity and facilitating decision-making, while asynchronous methods such as email and circular messages are associated with higher levels of confusion and inadequate support. To operationalize these findings, the study introduces the Organizational Communication Ambiguity Index (OCAI), a practical performance indicator that allows managers to compare tools, diagnose weaknesses, and guide strategic improvements. By offering actionable insights and a clear diagnostic framework, this research bridges the gap between theory and practice, providing value for both scholars and practitioners seeking to enhance communication in complex organizational settings.**

***Keywords*—organizational communication, ambiguity, hybrid communication, digital tools, media richness theory, workplace uncertainty, communication strategy**

I. Introduction

Organizational communication has evolved considerably over the past two decades, driven by advances in digital technologies, the rise of hybrid work environments, and the growing complexity of global operations (Mikołajczyk, 2024; Deschênes, 2024). While communication has always been critical to coordination, problem-solving, and performance, the modes through which organizations communicate have diversified. Traditional face-to-face interactions coexist with a growing array of digital tools such as email, videoconferencing, enterprise messaging apps, and collaborative platforms. These technologies promise increased efficiency and flexibility but also introduce new challenges related to information overload, reduced contextual cues, and heightened ambiguity (Dennis, Fuller, & Valacich, 2008; Phillips-Wren & Adya, 2020; Brucks & Levav, 2022; Abidi, Safi, Sarhan, & Bhagat, 2025).

It is well-established that different communication channels vary in their capacity to manage ambiguity and support decision-making. The foundational Media Richness Theory (Daft & Lengel, 1986) and subsequent work on media synchronicity (Dennis & Valacich, 1999) provide theoretical guidance, suggesting that richer media are more effective in resolving equivocality. However, the practical relevance of these frameworks has been called into question in today's digital-first, multitasking environments (Leonardi & Treem, 2012; Supriyadi, Sulistiasih, Rahmi, Pramono, & Fahrudin, 2025). Moreover, while many organizations invest heavily in digital communication infrastructure, empirical evidence assessing their real impact on ambiguity perception and communication effectiveness remains limited (Walker, Davis, & Stevenson, 2017; Li, Cheng, & Lu, 2024).

What remains underexplored is how employees perceive and utilize both traditional and digital communication modes in handling uncertainty. Few studies systematically compare the ambiguity-reduction potential of face-to-face versus digital media across varying contexts and tasks. There is also a lack of integrated tools to evaluate communication strategies from

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the perspective of ambiguity management. Bridging this gap is crucial, especially as organizations face mounting pressures to balance technological adoption with human-centered communication practices (Lee, Chaspari, Provost, & Narayanan, 2023; Magliocca, Canestrino, Carayannis, & Gagliardi, 2024).

This study addresses these gaps by examining how various communication modes, ranging from synchronous face-to-face interactions to asynchronous digital tools, are perceived in terms of their effectiveness in reducing ambiguity. Based on empirical data gathered from an industrial setting, the study introduces the Organizational Communication Ambiguity Index (OCAI), a novel framework designed to assess and optimize communication practices in contemporary work environments.

The significance of this research lies in its potential to inform organizational policy, training, and digital strategy. By identifying which modes are best suited for managing uncertainty, organizations can better align communication tools with task demands, user preferences, and strategic goals. Furthermore, this study contributes to theoretical developments by recontextualizing classical communication theories within the dynamics of hybrid and technology-mediated workspaces.

This paper is structured as follows. Section II presents the literature review of communication and ambiguity in organizations. Section III outlines the research methodology. Section IV presents the empirical findings. Section V discusses the implications for theory and practice. Section VI concludes with policy recommendations and avenues for future research.

II. Literature Review

Communication is a decisive element of organizational functioning, serving not only to transfer information but also to shape interpretation, build alignment, and manage ambiguity. Over the years, multiple theories have emerged to explain how communication channels affect task performance, decision-making, and uncertainty management. This section reviews foundational frameworks and recent developments in organizational communication, with a particular focus on the role of media richness, synchronicity, digital affordances, and ambiguity management. The review also highlights key gaps that this study aims to address.

A. Media Richness and the Foundations of Communication Theory

The Media Richness Theory (MRT), initiated by Daft and Lengel (1986), remains a cornerstone in the study of communication effectiveness. It postulates that communication media differ in their richness, their ability to facilitate shared meaning. Richness depends on four characteristics: feedback speed, number of cues, personalization, and language variety. According to MRT, rich media such as face-to-face communication are most effective in resolving ambiguity and equivocality, whereas leaner media like reports or emails are better suited for routine, unambiguous tasks.

While MRT provided a strong conceptual framework, it has been critiqued for its hierarchical classification of media and its limited adaptability to emerging digital environments (Trevino, Daft, & Lengel, 1990; Ishii, Lyons, & Carr, 2019; Neufeld, Roghanizad, & White, 2025). As organizations increasingly rely on asynchronous, technology-mediated communication, newer models have been developed to refine or challenge MRT.

B. Media Synchronicity and Communication Process Alignment

To address the limitations of MRT, Media Synchronicity Theory (MST) was proposed by Dennis and Valacich (1999). MST distinguishes between two fundamental communication processes: conveyance (transmission of information) and convergence (reaching shared understanding). It emphasizes matching media capabilities with the specific requirements of each process, rather than categorizing media as simply rich or lean.

MST highlights additional attributes such as synchronicity, rehearsability, reprocessability, and transmission speed (Dennis *et al.* 2008), offering a more nuanced view of media selection. This perspective is especially relevant in hybrid or remote work environments, where both synchronous (e.g., video calls) and asynchronous (e.g., email) tools are used concurrently.

C. Digital Affordances and Evolving Communication Practices

In the digital age, communication has become increasingly platform-based and decentralized. New affordances such as visibility, persistence, editability, and association (Leonardi & Treem, 2012) influence how messages are created, interpreted, and retrieved. Enterprise social media and collaborative platforms (e.g., Slack, Microsoft Teams) not only facilitate message exchange but also change how work and interaction are organized (Leonardi, 2014).

These affordances challenge traditional assumptions about media richness and suggest that users actively adapt media use depending on task complexity, social dynamics, and organizational norms (Majchrzak, Faraj, Kane, & Azad, 2013; Ronzhyn, Cardenal, & Batlle, 2023). Still, empirical evidence is limited on how these tools perform in managing ambiguity, a core concern in environments of high uncertainty.

D. Ambiguity and Equivocality in Organizational Communication

Ambiguity in organizational contexts refers to situations where messages or roles can be interpreted in multiple, often conflicting ways (Eisenberg, 1984). It differs from uncertainty, which is the lack of information, while ambiguity involves interpretive complexity. In high-ambiguity tasks, the choice of communication channel becomes particularly consequential.

Research has shown that in such contexts, employees tend to favor rich, immediate, and interactive modes of communication (Carlile, 2004; Maruping & Agarwal, 2004; Wang, Liu, & Parker, 2020). However, with the

increasing prevalence of remote work and asynchronous tools, this preference is not always operationally feasible, raising questions about how ambiguity is being managed in current practice (Davidson-Shivers and Rand, 2023; Emmanni, 2023; Zapata, Ibarra, & Blancher, 2024).

E. Gaps in Existing Research

While the theoretical models described above offer valuable insights, several gaps remain. First, few empirical studies have systematically compared the ambiguity-reduction capacity of traditional and digital communication modes. Second, most frameworks are conceptual or qualitative, lacking quantitative tools for practical evaluation. Third, while user behaviour and organizational culture are increasingly acknowledged as mediators of communication effectiveness, they are seldom integrated into diagnostic models.

Moreover, there is no unified index or framework specifically designed to evaluate communication effectiveness through the lens of ambiguity management across diverse media. Addressing this need, the present study introduces the OCAI as a new diagnostic tool to assess how different communication modes are perceived and applied in managing workplace ambiguity.

III. Methodology

This section presents the methodological design used to explore how different communication modes are perceived in terms of managing ambiguity in organizational contexts. It covers the research design, sampling, data collection instruments, construction of the communication ambiguity index, and variable specifications. The study seeks to bridge the gap between communication theory and practical assessment by offering an operational tool for evaluating communication effectiveness.

A. Research Design, Sampling, and Ethical Considerations

This study was conducted within a large, nationally significant public-sector enterprise that plays a central role in the execution and oversight of major national construction and infrastructure projects. These projects are strategically vital to the country's economic growth and social development and involve complex interdependencies among internal departments, external contractors, suppliers, and governmental agencies. In such a context, effective internal communication is essential to ensure coordination, timely decision-making, and the successful delivery of high-stakes, large-scale projects. Given its size, complexity, and strategic importance, this organization provides an ideal context for examining communication systems and identifying weaknesses that may affect project performance and outcomes.

The research adopted a descriptive and exploratory case study design, appropriate for gaining a deep understanding of communication dynamics in a single organizational setting. The focus was on context-specific analysis rather than statistical generalization, allowing for rich insights into internal communication practices, challenges, and systemic issues. A purposive sampling strategy was used to identify participants directly engaged in interdepartmental communication and project coordination activities. This included administrative staff, technical personnel, and managers across different functional areas. The final sample consisted of 31 valid responses, representing approximately 22% of the total personnel directly involved. While this number may seem modest, it provides strong coverage and representativeness within the organization, ensuring that the voices of the most relevant stakeholders are captured.

The adequacy of this sample size is supported by established research guidelines for organizational studies and case-based research. Marshall and Rossman (2021) emphasize that purposive samples are well suited for generating deep, context-rich insights, especially when investigating complex organizational processes. Similarly, Yin (2018) notes that smaller, bounded samples are appropriate for exploratory case studies focused on understanding the internal dynamics of a single institution. In addition, Hill, Thompson, & Williams, (1997) and Kranstad, Søftestad, Fredriksen, & Willumsen, (2019) report that sample sizes of 16 to 30 participants are generally sufficient to reach thematic saturation and pattern recognition, particularly when participants share similar roles, workflows, and communication contexts. Considering these guidelines and the fact that the studied enterprise is responsible for nationally critical projects, the 31 responses collected provide an adequate foundation for identifying systemic communication challenges and developing evidence-based recommendations.

The empirical survey was conducted on-site over a 15-day period, which allowed to capture responses during normal working operations and ensure the authenticity of reported practices. This extended period made it possible to reach employees working across multiple shifts and different project teams, while minimizing disruption to daily operations and maximizing participation rates. The prolonged engagement provided a realistic and comprehensive assessment of the organization's communication ecosystem and facilitated the collection of high-quality data reflecting typical communication practices.

Rigorous ethical standards were perceived during the study. Participation was entirely voluntary, and respondents were fully informed about the objectives, scope, and intended use of the research. To protect participants, all responses were collected anonymously, with no identifying personal information recorded. Results were aggregated and reported at the group level, ensuring that no individual could be identified. The study adhered to institutional and international guidelines for responsible data management, emphasizing transparency, respect, and privacy. These measures guaranteed that findings could be shared openly with both academic and professional audiences without compromising confidentiality or the integrity of the participants.

In summary, this study's research design reflects a rigorous and ethically sound approach to exploring communication in a complex, high-stakes organizational setting. By combining an extended 15-day on-site survey,

purposive sampling, and strict confidentiality protocols, the study provides robust, actionable insights while respecting the rights and privacy of all participants.

B. Instrumentation, Data Collection, and Data Analysis

The questionnaire consisted of five thematic sections designed to capture a comprehensive view of internal communication practices within the organization:

(1) **Sociodemographic profile:** Capturing basic information such as gender, age group, educational background, department, and job function.
(2) **Communication practices:** Measuring the frequency and context of use for eight communication solutions: face-to-face, meetings, phone, email, SMS, video conferencing, written memos, and information dashboards.
(3) **Organizational support and training:** Assessing whether each communication tool was accompanied by sufficient institutional support and structured user training.
(4) **Perceived ambiguity:** Evaluating each tool's ability to reduce ambiguity across structured, semi-structured, and unstructured tasks.
(5) **Tool preference and ranking:** Allowing participants to rank tools based on their clarity and effectiveness for day-to-day professional activities.

5-point Likert scale, going from *"Strongly disagree" (1)* to *"Strongly agree" (5)*, was used to measure items, enabling robust statistical comparisons across tools and communication dimensions.

The questionnaire contained a total of 30 items distributed across the five sections (Table I).

TABLE I. CONSTRUCTS AND QUESTIONNAIRE ITEMS

Communication dimension	Number of items	Source/Type
Transmission of strategic objectives	3	Adapted from CSQ (Downs & Hazen, 1977; Gray & Laidlaw, 2004; Rubin, Palmgreen, & Sypher, 2020)
Cascading of information	4	Adapted from Tourish & Hargie (2004); Hargie (2021)
Content clarity and relevance	4	Adapted from CSQ (Downs & Hazen, 1977)
Speed of communication	3	Self-developed
Coordination between departments	4	Mixed (adapted and self-developed)
Upward communication (feedback)	4	Adapted from Downs & Adrian (2012); Tkalac Verčič, Sinčić Ćorić, & Pološki Vokić (2021)
Technological tools for communication	4	Self-developed
Internal satisfaction with communication	4	Mixed sources
Total items	30	-

Several items were adapted from validated instruments, including the *Communication Satisfaction Questionnaire (CSQ)* established by Downs & Hazen (1977), validated and operationalized in subsequent studies by Gray & Laidlaw (2004) and Rubin *et al.* (2020). Additional items were adapted from communication audit frameworks proposed by Tourish & Hargie (2004), Hargie & Tourish (2009), and Hargie (2021), as well as diagnostic tools described by Downs & Adrian (2012), which were later validated by Tkalac Verčič *et al.* (2021).

Other items were self-developed to address context-specific variables related to large-scale construction project management, interdepartmental coordination, and the unique operational environment of a nationally significant organization. Adapted items were slightly reworded for contextual clarity while strictly maintaining their theoretical and conceptual integrity to preserve validity.

Quantitative data analysis:

Data were scrutinized using IBM SPSS Statistics V.26. The following steps were undertaken:

- Means, frequencies, and standard deviations were calculated for each communication dimension to identify patterns in tool usage, organizational support, and perceived clarity or ambiguity.
- Reliability testing: Internal consistency was assessed using Cronbach's alpha. Values going from 0.78 to 0.86, indicate good reliability and alignment with thresholds for social sciences research (Nunnally & Bernstein, 1994).
- Comparative Analysis: Scores were compared across dimensions to highlight areas of strength (e.g., technological infrastructure) and weakness (e.g., upward communication and feedback).

Manual content analysis:

To complement the statistical results and provide deeper contextual insights, a manual content analysis was conducted using qualitative data collected from two main sources:

(1) Open-ended questionnaire responses provided by participants, which captured nuanced views on communication practices and challenges.
(2) Internal organizational documents, including memos, meeting reports, and procedural guidelines.

The analysis followed a systematic coding process:

- Responses were first read and categorized into thematic codes informed by both the literature and emergent patterns observed during analysis.
- Themes were refined iteratively to capture recurrent communication challenges such as clarity gaps, structural bottlenecks, and feedback deficiencies.
- Findings were triangulated with quantitative data, ensuring consistency and enhancing the validity of the overall study conclusions.

By combining validated survey instruments, context-specific self-developed items, quantitative statistical analysis, and qualitative manual content analysis, this study provides a comprehensive, mixed-method evaluation of internal communication. This multi-pronged approach ensures both methodological rigor and practical relevance in diagnosing and improving communication systems within a complex, large-scale public-sector organization.

C. Construction of the Organizational Communication Ambiguity Index (OCAI)

To operationalize communication clarity, the study developed an OCAI. This composite indicator integrates three key dimensions:

- U: Frequency of tool usage by employees.
- T: Degree of organizational training and support provided for the tool.
- A: Perceived ambiguity when using the tool (inverted to reflect clarity).

The OCAI is calculated using the following formula:

$$OCAI_i = \frac{1}{3}\left(\frac{U_i}{5} + \frac{T_i}{5} + \frac{1 - A_i}{5}\right)$$

This normalization ensures each component is weighted equally on a 0 to 1 scale. The higher the OCAI score, the more effective the communication tool is perceived to be in reducing ambiguity. This index facilitates cross-tool comparison and can be used by organizations as a diagnostic and improvement framework.

It is important to note that the OCAI is conceived as a management Key Performance Indicator (KPI) rather than a psychometric measurement scale. Its components are based on directly observable and quantifiable data, making its validity practical and operational. Therefore, while statistical validation could be explored in future research, it is not a prerequisite for its use as a decision-making tool within organizations.

D. Summary of Measured Variables

The operationalization of variables is detailed in Table II, which outlines the types and measurements used to structure the dataset. Each communication tool was analyzed across these variables to evaluate its contribution to reducing ambiguity in the workplace. The structured framework ensured robust, reproducible analysis aligned with the study's aim of translating qualitative perceptions into actionable organizational insights.

TABLE II. OPERATIONALIZATION OF VARIABLES USED IN COMMUNICATION ANALYSIS

Variable	Type	Description	Measurement
Age group	Demographic	Categorized by ranges (e.g., <30, 30–45, >45)	Categorical
Gender	Demographic	Male or Female	Binary
Usage frequency (U)	Independent	Self-reported frequency of using each tool	5-point Likert scale
Organizational training and support (T)	Independent	Availability of training or assistance per tool	5-point Likert scale
Perceived ambiguity (A)	Dependent	Degree of ambiguity encountered when using each tool	5-point Likert scale
Communication preference	Derived	Ranking of tools by respondents based on perceived clarity	Ordinal
OCAI score	Composite index	Normalized index combining U, T, and (1–A)	Continuous (range 0–1)

IV. RESULTS

This section presents the key findings of the empirical study, based on the responses of 31 employees regarding their perceptions and usage of eight different communication tools. The analysis focused on frequency of use, clarity, training availability, and perceived ambiguity across different task types. The insights were structured around the OCAI, which aggregates these variables to support comparative evaluation.

A. Communication Tools Usage and Institutional Support

The data revealed that traditional communication modes, such as face-to-face interactions and telephone calls, are still central to workplace exchanges. Face-to-face communication was particularly dominant, being used extensively for tasks requiring clarification or rapid feedback. Telephone was the next most frequently used, appreciated for its immediacy and ability to convey tone. Email, while widely used, was typically reserved for more structured and formal exchanges, often involving documentation or task follow-up.

TABLE III. COMMUNICATION TOOL EVALUATION SUMMARY

Communication tool	Frequency of use (1–5)	Training/Support (1–5)	Perceived ambiguity (1–5)
Face-to-Face	4.5	4.3	0.4
Telephone	4.1	4.0	0.8
Email	3.7	3.9	1.3
Meetings	3.5	3.8	1.9
Information dashboards	3.0	3.2	2.1
Video conferencing	2.5	2.4	2.3
SMS	2.1	2.0	3.0
Written memos	1.9	2.1	3.2

Note: Ambiguity is rated such that lower values represent clearer communication.

In contrast, tools such as SMS and video conferencing were infrequently used. SMS was employed only for short urgent messages and lacked institutional support. Video conferencing showed potential but was hindered by

limited training, poor infrastructure, and inconsistent adoption. Written memos were considered outdated and not aligned with the current pace of communication in the organization.

Table III summarizes the frequency of use, institutional support (training or guidelines), and perceived ambiguity across the eight tools.

B. Perceived Clarity in Relation to Task Type

The study distinguished between structured, semi-structured, and unstructured tasks to assess whether the effectiveness of each communication tool varied with the complexity of the task. Face-to-face and telephone communication were consistently ranked highest in terms of clarity for semi-structured and unstructured tasks, where ambiguity is inherently greater. These tools allowed real-time clarification, emotion detection, and nuanced interpretation, factors critical in tasks involving uncertainty or coordination among multiple actors.

In contrast, for structured tasks, tools such as email and information dashboards were more effective. These tools provided traceability, data visibility, and archiving functions useful for planning, reporting, and decision tracking (Souames, Mohammedi, Zouaghi, Gunasekaran, Beldjoudi, & Laghouag, 2025). However, they were less suited to contexts where feedback loops and real-time adjustments were necessary.

The Table IV synthesizes the appropriateness of each tool across task types.

TABLE IV. COMMUNICATION TOOL EFFECTIVENESS BY TASK TYPE

Tool	Structured tasks	Semi-structured tasks	Unstructured tasks
Face-to-Face	High	Very High	Very High
Telephone	Moderate	High	High
Email	High	Moderate	Low
Meetings	Moderate	Moderate	Moderate
Information Dashboards	High	Low	Low
Video Conferencing	Low	Moderate	Moderate
SMS	Low	Low	Very Low
Written Memos	Low	Low	Very Low

C. Participant Preferences and Ambiguity Index (OCAI)

Participants were asked to rank their communication tool preferences based on clarity, efficiency, and usability. Face-to-face interaction and telephone communication received the highest scores, followed by email and structured meetings. This hierarchy reflected a convergence between emotional trust in the tool, institutional support, and the perceived capacity of each tool to reduce ambiguity.

To formalize this assessment, an OCAI was developed, aggregating frequency of use (U), training availability (T), and inverted ambiguity score (1–A) for each tool. This provided a synthetic indicator of communication effectiveness.

These results in Table V quantitatively confirm that tools with both high interactivity and institutional support are more effective in reducing ambiguity. The consistency of face-to-face and telephone communication scores also illustrates the continued relevance of human-centered communication modes, even in increasingly digitalized environments.

TABLE V. OCAI SCORES FOR EACH COMMUNICATION TOOL

Tool	Usage (U/5)	Training (T/5)	1–Ambiguity (1–A/5)	OCAI Score (Avg of 3)
Face-to-Face	4.5	4.3	4.6	4.47
Telephone	4.1	4.0	4.2	4.10
Email	3.7	3.9	3.7	3.76
Meetings	3.5	3.8	3.1	3.46
Dashboards	3.0	3.2	2.9	3.03
Video conferencing	2.5	2.4	2.7	2.53
SMS	2.1	2.0	2.0	2.03
Written memos	1.9	2.1	1.8	1.93

V. DISCUSSION

This section builds on the empirical outputs of the study and places them within a broader theoretical and practical framework, addressing the persistent challenges of ambiguity in organizational communication and the transformation required in digital and managerial practices. It explores the implications from theoretical, strategic, and managerial perspectives, using recent academic and professional insights.

A. Theoretical Implications: Revisiting Richness and Ambiguity

The findings reaffirm MRT (Daft & Lengel, 1986), emphasizing that richer communication channels, such as face-to-face and telephone, are most effective in managing ambiguous and equivocal tasks due to their synchronous nature, non-verbal cues, and immediacy of feedback. These results are consistent with updates from Carlson & Zmud (1999); Dennis *et al.* (2008) and Wang *et al.* (2020) who argue that task equivocality and social presence must be balanced in selecting communication modes.

Recent studies by Flinchum (2022) and Scott & Allen (2023) have extended these frameworks by showing that even technologically advanced tools (e.g., video conferencing, collaborative platforms) fail when not embedded in relational trust and organizational culture. In our context, while digital tools exist, they remain underused due to structural resistance and lack of strategic integration.

The study also supports and refines the Technology Acceptance Model (TAM) (Venkatesh, Morris, Davis, & Davis, 2003; Mortenson & Vidgen, 2016; Mogaji, Viglia, Srivastava, & Dwivedi, 2024; Al-Momani & Ramayah; 2025), where adoption is influenced not only by perceived practicality and ease of usage, but also by social influence and assisting conditions. The behavioural hesitations and lack of user training align with findings by Al-Emran, Elsherif, & Shaalan, (2016) and Bala & Venkatesh (2016), who emphasize digital maturity as a prerequisite for successful ICT diffusion.

Furthermore, this study contributes to the maturation body of work on digital communication ecology (Leonardi, 2021), which explores how organizations

manage a blend of synchronous and asynchronous tools in hybrid settings. The misalignment between available tools and communicative tasks reflects a low communication-system maturity, echoing insights from Lee & Meng (2021) and Grooss, Presser, & Tambo, (2022) on the need for communication competency frameworks in digital transitions.

B. Strategic Implications: From Fragmentation to Integration

Strategically, the data reveals that communication is not formally embedded in the organizational strategy. As in many public enterprises, the communication function is often reactive, fragmented, and lacks an overarching policy, as shown by Mazzei (2010); Cornelissen, Mantere, & Vaara, (2014) and Whittle, Vaara, & Maitlis, (2023). This absence of strategic integration exacerbates ambiguity, hinders coordination, and impairs institutional responsiveness.

The implementation of a comprehensive Strategic Communication Plan (SCP), including audience segmentation, message targeting, multi-channel integration, and performance metrics, is a pressing need. This approach is supported by Zerfass, Verhoeven, Tench, Moreno, & Verčič, (2018), who emphasize that organizations with a documented and evaluated communication strategy are more agile and resilient in managing change and complexity.

Digital transformation in communication must also be anchored in Enterprise Architecture and Change Management practices (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013; Kane, Palmer, Phillips, Kiron, & Buckley, 2015; Tagscherer & Carbon, 2023; Fang & Liu, 2024; Zouaghi, 2025). Integrated communication platforms (e.g., Microsoft Teams, Slack, internal social networks) should be leveraged not only as tools, but as ecosystems that facilitate transparency, responsiveness, and knowledge diffusion (Krings, Nissen, & Seebacher, 2025), even alongside ERP systems implementation (Zouaghi & Laghouag, 2016) and/or management.

The results also align with ISO 9001:2015 and ISO 30401:2018 standards, which emphasize internal communication as a pillar of quality and knowledge management systems (Pawlowsky, Pflugfelder, & Wagner, 2021; Mohammad, Abdullah, Jabar, Nor, & Nur, 2024). The absence of structured internal communication mechanisms limits cross-departmental learning and performance alignment.

C. Managerial Implications: Toward Ambiguity-Resilient Organizations

At the managerial level, the findings suggest a strong need for both technical training and soft skills development. Ambiguity often results from unclear roles, lack of coordination, and failure to clarify expectations, issues that have been widely documented in the work of Clampitt & Downs (2004) and Tourish & Hargie (2009).

Managers must learn to match communication mode to task, what Daft, Lengel, & Trevino, (1987) call media-task fit. For high ambiguity tasks like decision-making or crisis management, synchronous and richer media should be encouraged. For routine information sharing, digital dashboards or email may suffice. This calls for building digital literacy (Nikou, De Reuver, & Mahboob, 2022; Coco, Colapinto, & Finotto, 2024) and communicative competence (Keyton, Caputo, Ford, Fu, Leibowitz, & Wu, 2013; Morris, Sollitto, & Rodriguez, 2024) across hierarchical levels.

Furthermore, employee voice (Morrison, 2014; Morrison, 2023; Guarin, Townsend, Wilkinson, & Edwards, 2025) and participative communication cultures (Men & Yue, 2019; Sun, Li, Lee, & Tao, 2023; Samsudin, 2025) must be fostered. The study showed that feedback mechanisms are absent or symbolic. Managers must create structured yet flexible systems for employees to raise concerns, share knowledge, such as in a supply chain context (Zouaghi, 2011), and contribute to organizational learning.

Ethically, communication protocols must also respect principles of transparency, equity, and data protection (Meng, Kim, & Reber, 2022; Hagelstein, Volk, Zerfass, Silveira, Macnamara, Meng, & Hung-Baesecke, 2024), as outlined in ISO 26000 and GDPR-aligned policies. Ethical ambiguity, unclear rules, selective information sharing, emerges as an overlooked source of inefficiency and disengagement in the studied organization.

Finally, the institutionalization of communication audits, a best practice advocated by Argenti (2017) and Aggerholm & Thomsen (2024) would enable organizations to track message clarity, tool effectiveness, and audience reception over time.

VI. Conclusion

This study examined the ambiguity and inefficiencies in internal communication within a large public-sector enterprise tasked with delivering major national construction and infrastructure projects. These projects are strategically vital and involve complex interdependencies among internal departments, external contractors, suppliers, and government agencies. The research aimed to understand how traditional communication methods and digital tools interact to influence coordination, decision-making, and the overall performance of high-stakes projects.

The findings revealed notable structural gaps, such as unclear reporting lines, the absence of standardized communication procedures, and weak cross-departmental coordination. These weaknesses result in fragmented information flows, duplication of efforts, and delays in decision-making. Without clear communication structures, employees often face uncertainty about where to report issues and how to escalate concerns, which ultimately undermines operational efficiency and project delivery timelines.

From a behavioral perspective, the study identified limited communication skills, insufficient training, and low employee engagement. The lack of effective feedback mechanisms was also highlighted, leading to missed opportunities for improvement and innovation. Employees expressed a lack of confidence in sharing information, resulting in inconsistent use of communication tools and

reduced collaboration between teams. These factors create an environment where ambiguity persists, making it difficult to align daily operations with strategic objectives.

The technological analysis revealed that while digital platforms such as email, SMS, dashboards, and project management systems exist, they are underutilized and poorly integrated. Outdated systems and the lack of technical support further hinder the potential of these tools, forcing employees to rely heavily on traditional, slower communication methods such as printed memos and in-person meetings. This limits efficiency and slows the flow of critical information.

Based on these findings, several recommendations are proposed. Structurally, the organization should develop standardized communication procedures and establish clear reporting lines to improve accountability and transparency. Cross-functional coordination teams should be created to enhance collaboration during complex project phases. The OCAI introduced in this study can be used as a monitoring tool to evaluate communication performance and guide continuous improvement.

Behaviorally, it is essential to implement targeted training programs to strengthen digital literacy, active listening, and feedback skills. Building a culture of openness and trust will encourage employees to share information freely and participate actively in improving communication processes. This can be achieved through open-ended surveys, feedback mechanisms, and employee involvement in strategy development.

Technologically, the organization should modernize its communication systems by integrating tools into a single, user-friendly platform that supports real-time collaboration (Verny, Oulmakki, & Zouaghi, 2025). Reliable technical support must be provided, and all new systems should be pilot-tested before deployment to ensure usability and acceptance.

By acting on these recommendations, the organization can reduce ambiguity, improve coordination, and create a more efficient, transparent, and adaptive communication environment, ultimately strengthening its capacity to deliver complex national projects successfully.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

IZ conceived the research, conducted the research, analyzed data, interprete it and wrote the paper; MF conducted the research, analysed and interprete data; RB analysed data; all authors had approved the final version.

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