

A comprehensive assessment of the effectiveness of organizational communication in a Cuban university

Diagnóstico integral de la efectividad de la comunicación organizacional en una universidad cubana

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ABSTRACT

Communication is fundamental to organizational success. In Cuba, it has been declared one of the three pillars of government management, and the enactment of Social Communication Law 162/2023 constituted a milestone in the country's communication history. Aligned with this, the present research conducts an analysis of its effectiveness within a Cuban university. This is achieved through the design and application of a mathematical model based on compensatory fuzzy logic, supplemented by other theoretical, empirical, and statistical methods. The results reveal a predominantly reactive management approach, characterized by structural deficiencies, strategic misalignment, non-compliance with the national regulatory framework, and neutral or negative perceptions among internal and external publics. The model demonstrates that the university's communication is ineffective and identifies the "communication management" variable as the lowest-performing dimension. It is concluded that a transformation of the operational model towards a strategic one is imperative to align communication practices with the institution's excellence goals.

Keywords: organizational communication; communication management; internal communication; external communication; communication effectiveness.

RESUMEN

La comunicación es fundamental para el éxito organizacional. En Cuba ha sido declarada uno de los tres pilares de la gestión de gobierno y la promulgación de la Ley 162/2023 de Comunicación Social fue un hito en la historia de comunicación en el país. Alineado a esto, en esta investigación se realiza un análisis sobre su efectividad en una universidad cubana a través del diseño y aplicación de un modelo

matemático basado en la lógica difusa compensatoria y de la utilización de otros métodos teóricos, empíricos y estadísticos. Los resultados revelan una gestión predominantemente reactiva, caracterizada por insuficiencias estructurales, desalineación estratégica, incumplimiento del marco regulatorio nacional y percepciones neutrales o negativas de los públicos internos y externos. El modelo demuestra que la comunicación en la universidad no es efectiva e identifica la variable "gestión de la comunicación" como la de más bajo desempeño. Se concluye que es imperiosa una transformación del modelo operativo hacia uno estratégico para alinear la práctica comunicacional con la proyección de excelencia institucional.

Palabras clave: comunicación organizacional; gestión de la comunicación; comunicación interna; comunicación externa; efectividad de la comunicación.

Introduction

Organizational communication has evolved from being a merely instrumental or support function to becoming an essential strategic process for the management of any contemporary institution [1]. This transformation is particularly significant in the realm of higher education, where communication is the key to the cohesion of the university community, the construction of a solid institutional identity, the projection of a quality image, the attraction of talent and resources, and the establishment of strategic alliances [2]. Thus, communication must function as an efficient channel for transmitting information, guidelines, and training, while also fostering a favorable work environment that encourages motivation and socialization through both personal and electronic media [3].

This efficient communication manifests in two fundamental styles within the organization: internal and external [4]. Internal communication encompasses actions aimed at maintaining optimal relationships among the organization's members, ensuring they are informed, united, and motivated to achieve common goals. External communication, on the other hand, focuses on messages directed towards external publics, with the purpose of strengthening relationships and promoting services or products [5]. In this sense, communication is transversal to all organizational processes, always acting as a mediator and facilitator of feedback and the generation of shared symbols and meanings, essential elements for the formation of the institutional image. This function also enables the implementation of strategies targeted at managers, employees, and other related groups, strengthening ties with the individuals and institutions that benefit from its social mission [6, 7].

Currently, the impact of information and communication technologies (ICTs) has revolutionized the way organizations manage their communication, both internal and external [8, 9]. This technological shift holds special significance for universities, where communication underpins the fundamental processes of knowledge formation and socialization,

essential pillars that define their *raison d'être*. Therefore, university communication not only acts as a medium for transmitting knowledge but also as a mechanism for responding to social and scientific demands, especially in virtual environments where technology has transformed educational processes [10, 11].

Faced with these challenges, it is imperative for 21st-century universities to promote an institutional culture coherent with local, national, and international social dynamics [12]. To this end, efficient organizational communication is indispensable, as it allows for the articulation of institutional culture with society, facilitating the university's integration into changing contexts and contributing to more effective management that favors the achievement of academic and social objectives [13]. This cultural and communicational adaptation must consider that each region and state presents particularities that shape the identity and social projection of their universities, reflected in the reputation they build from their functional strategies adapted to specific sociopolitical and economic realities [14].

A priority aspect in this field is the measurement and socialization of scientific production. Traditionally, visibility has focused on indicators based on international indexed journals and systems like Web of Science, Scopus, and Scielo, placing less emphasis on the importance of dissemination in local and national spheres. Therefore, it is crucial to strengthen the public communication of science, promoting the social appropriation of knowledge and its application to solve concrete problems [15]. The socialization of scientific knowledge not only drives academic progress but also influences decision-making, the incorporation of innovations, and the improvement of quality and efficiency in various sectors, and it should be led by academia to prevent the elitization and exclusion of knowledge.

To facilitate these processes, communication management presents itself as a strategic tool that allows for the design of effective information flow systems, the identification of obstacles to achieving institutional objectives, the monitoring of the consolidation of corporate identity, and the projection of actions that strengthen reputation among different publics, differentiating the university in a very broad global academic offering [16, 17]. Well-implemented communication management not only disseminates information but also promotes governance, encourages participation, and guarantees transparency in accountability, essential elements for the social legitimacy of universities.

This framework acquires particular relevance in Cuba with the enactment of Social Communication Law 162/2023 and the implementation of the System for Evaluation and Accreditation of Higher Education Institutions. Adherence to these regulatory frameworks represents not only a legal mandate but also an indicator of managerial maturity and commitment to institutional excellence. In the Cuban context, although an emerging literature on organizational communication in universities has developed, it is often fragmented and focused on partial aspects such as specific

campaigns, the use of social media, or diagnostics of internal or external communication [14, 19]. Therefore, studies that integrate legal, structural, perceptual, technological, and strategic analyses from a systemic perspective providing a holistic view of communication management are required. This article proposes a comprehensive diagnostic to fill this gap and support decision-making.

The university under study, recognized for its category of excellence, defines in its Strategic Project up to 2026 ambitious goals that depend explicitly or implicitly on effective communication, such as strengthening its presence in digital media and integrated communication management at all organizational levels. However, preliminary observations and internal reports suggest a discrepancy between these strategic aspirations and the operational reality of its communication system, configuring the central problem of this research.

Therefore, the main objective is to comprehensively diagnose the effectiveness of organizational communication in this Cuban university. To achieve this, the degree of compliance with the regulatory framework and internal documentary coherence will be evaluated; the structure and available human and technological resources for communication management will be characterized; the perception of internal and external publics regarding institutional effectiveness will be analyzed; the quality and performance of official digital channels (website and social media) will be examined; and the global level of effectiveness will be determined using a compensatory fuzzy logic model.

Methods

A methodology was designed that begins with an analysis of the state of the art to identify good practices reflected in the literature on organizational communication in universities. It continues with a comprehensive diagnostic focusing on public and enterprise architecture to determine the variables, which are finally included in a mathematical model to determine the level of effectiveness of organizational communication in the university under study. For this purpose, theoretical, empirical, and statistical methods were used, organized into 6 phases.

- Phase 1. Theoretical Research: The methods of induction-deduction, analysis-synthesis, and historical-logical analysis were employed. These allowed for the search and retrieval of information from the scientific literature, moving from the general to the specific, to identify trends and best practices related to organizational communication in universities.
- Phase 2. Technical and Normative Documentary Analysis: The gap between formal planning and documented reality was assessed. An exhaustive and critical review of three documentary categories was conducted: university strategic documents, national regulations, and process documentation. A congruence matrix was created to

contrast regulatory requirements with internal documentary evidence and categorize compliance levels.

- Phase 3. Structural and Operational Characterization: The installed capacity for executing communication management was described, taking into account the business, information, applications, and infrastructure dimensions of the enterprise architecture approach.
- Phase 4. Public Perception Assessment: For internal communication, a survey was designed and applied to a sample of 257 people (stratified by roles), from a finite population of 9020, resulting in an 89% confidence level with a 5% margin of error. Concordance, correlation, and reliability were analyzed using statistics such as Cronbach's Alpha, Chi-Square test, and Cramer's V. The perception of external publics regarding organizational communication was gauged through an exploratory study.
- Phase 5. Technical Analysis of Digital Channels: The website analysis was performed by applying a checklist developed from an adaptation of the Analysis Profile for the Evaluation of Cuban University Websites [18]. Social media were characterized based on direct observation.
- Phase 6. Modeling Organizational Communication Effectiveness: A mathematical model based on compensatory fuzzy logic was designed to answer the question: "To what extent is it true that organizational communication is effective?" Three variables with their indicators were defined, as shown in figure 1.

Comunicación Interna (I)	Comunicación Externa (E)	Gestión de la Comunicación (G)
Flujo comunicacional (FC) Calidad de los canales internos (CCI) Grado de comprensión de mensajes (CM) Retroalimentación (R) Mitigación de barreras existentes (MBE) Participación de públicos internos (PPI)	Estrategia de marca y posicionamiento (MP) Relaciones públicas (RP) Calidad de los canales externos (CCE) Comunicación con egresados (CEG) Vinculación con el medio y la responsabilidad social (VMRS)	Planificación de la comunicación (PC) Integración con la estrategia de la universidad (IE) Asignación de recursos (AR) Capacitación del personal (CP) Sistemas de medición y evaluación (ME)

Fig. 1 - Variables identified for the mathematical model

For this last phase, a checklist was developed and applied where each question presented a scale from 0 to 10 points to select the real situation reflected by the university. The predicate tree shown in Figure 2 was developed to determine the elements conditioning effectiveness. It reflects that the university is effective in its organizational communication when it is good in internal communication (I), good in external communication (E), and good in communication management (G). Twelve variables were considered as compound predicates and thirty-one as

simple predicates. The AND (^) operator was generally used, and the linguistic modifier very was introduced for three simple predicates. The verbal formulations are expressed as follows:

The university is good in internal communication when:

1. It is good in its communicative flow (FC).
 - The balance between downward, upward and horizontal flow is good (EADH).
 - The clarity on the chain of command and communication is good (CCMC).
 - The level of transparency is good (NT).
 - The level of agility and timeliness of communication is very good (NAO).
2. The quality of internal channels (CCI) is good.
 - The diversity of channels is good (DC).
 - The accessibility, usability, stability and reliability of the channels is good (AUCE).
3. The degree of message comprehension (CM) is good.
 - The level of clarity and simplicity of language is good (CSL).
 - Adaptability to the context is good (AC).
4. The level of feedback is good (R).
 - The selection of the channels for feedback is good (SCF).
 - The culture of active listening (CEA).
 - The level of responses given is good (NRD).
5. Mitigation of existing barriers is good (MBE).
6. Participation of internal publics is very good (PPI).

The university is good in external communication (E) when:

1. Its branding and positioning strategy (MP) is good.
 - The consistency of its identity is good (IV)
 - Its reputation and public perception are good (RPP)
2. It is good in its public relations (RP).
3. The quality of external channels (CCE) is good.
4. Its communication with graduates (CEG) is good.
5. Its community engagement and social responsibility (VMRS) is good.
 - The communication of university extension projects is good (CEU).
 - The communication of research with social impact is good (CIS).

The university is good in communication management (G) when:

1. Communication planning (PC) is good.
 - The development of annual and monthly plans is good (PAM).
 - There is good flexibility in communications plans (FP).
 - The development and implementation of the crisis plan is good (PCRS).
 - The development and implementation of the identity manual is good (MID).
2. Integration with the university strategy (IE) is very good.

3. Resource allocation (AR) is good.
4. Staff training (CP) is good.
 - The communication skills of spokespersons are good (HCV).
 - The communication skills of managers and leaders are good (HCCL).
 - The skills of workers are good (HCT)
5. Measurement and evaluation systems (ME) are good.

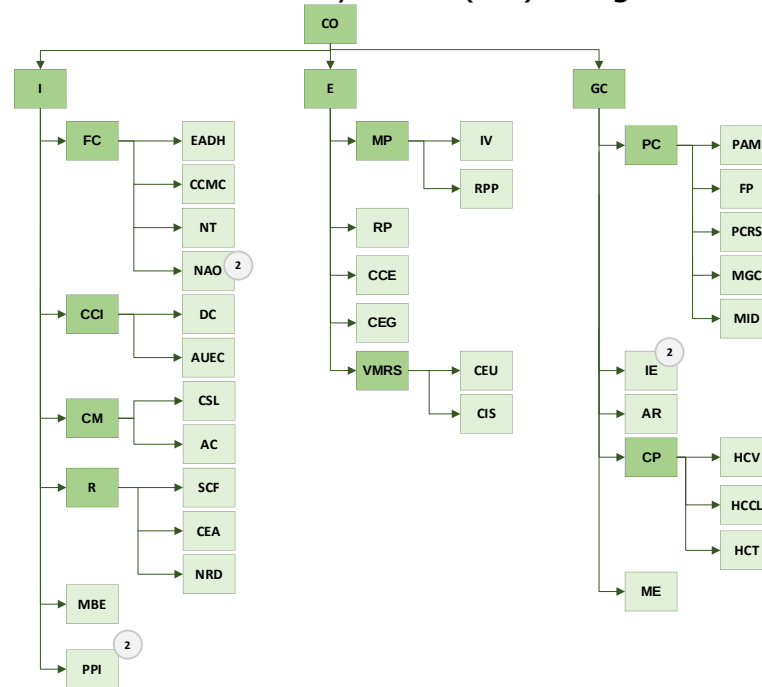


Fig. 2 - Predicate Tree

Center (or acceptable) and inadmissible values were defined, and the deviation value was calculated to verify it was within the correct range for modeling. The values of the simple predicates were determined, followed by the calculation of the compound predicate values and their evaluation on the truth level scale.

Results

Small transformations regarding the inclusion of topics related to organizational communication are observed in the university's strategic management. Figure 3 shows the evolution of these topics in the strategic projects of the last 5 years.

A COMPREHENSIVE ASSESSMENT OF THE EFFECTIVENESS OF ORGANIZATIONAL COMMUNICATION IN A CUBAN UNIVERSITY



Fig. 3 - Communication in the university's strategic projects.

The documentary analysis revealed substantial non-compliance with national regulations. The university lacks a communication management manual and an implemented communication strategy, explicit requirements of Law 162/2023. The application of the General Self-Control Guide from the Republic's General Comptroller Office (2025) showed 80 % of indicators were not met. The evaluation against the basic documents of the System for Evaluation and Accreditation of Higher Education Institutions of the Republic of Cuba showed critical results: while visibility indicators were partially met, fundamental aspects such as the "existence of a communication system in the university community" and "human resource management for a good work climate" were evaluated as Non-Compliant. Internally, it was identified that the information for the "Information, Communication, and Informatization" process was outdated and that the process was previously conceived operationally, lacking strategic activities like active listening of publics or risk management.

The responsible area is the Communications Office, which operated with a staff covering only 31 % of its authorized positions, and 65 % of the personnel had less than 5 years of experience in the role. Furthermore, the Political-Ideological Observatory, subordinate to the Vice-Rectorate of University Extension, is involved, whose activity was limited as only 20 % of its staff was filled. The technological infrastructure presented critical shortcomings: computing equipment incapable of running design and editing software, an outdated web content management system nearing obsolescence, lack of licenses for specialized software, absence of an information system to manage requests and plans, and insufficient server storage capacity.

The perception of internal publics regarding organizational communication was not favorable. The survey results showed that:

- An intermediate perception predominates, reflecting neutral evaluations with acceptable aspects, but also identifying broad room for improvement. The reliability analysis yielded a Cronbach's Alpha of 0.82, indicating good internal consistency and reliability of the obtained responses.
- 40.9 % do not have a favorable perception of the role of internal communication in fostering participation for decision-making.
- The communication channels used to address their work or student affairs coincide with the channels through which they receive official information. Digital social networks are the most used channel by a wide margin compared to in-person meetings or encounters, which rank second.
- There is a significant association ($p=0.043$ in Chi-Square test) between the type of internal public or role and the type of communication that prevails in their development area, although it is not strong (Cramer's V equal to 0.14 indicates a moderate but low association). Among students, mixed and downward communication is more common (only 6.4 % of students perceive communication in their area as mainly horizontal). Among teachers, a combination of mixed and downward communication prevails, but with more horizontal communication than among students. For managers and non-teaching staff, the patterns are different.
- The barriers that most affect internal communication are structural-organizational and technological. Analysis by role shows that most students consider technological barriers to be the most affecting, while teaching staff, non-teaching staff, and managers state they are human/cultural barriers. The breakdown by age range reveals that people up to 26 years old opine that technological barriers are the most influential, while those older than that age opine they are human/cultural barriers.
- The overall satisfaction level with internal communication is moderate for all publics; however, it is important to note that approximately 32 % indicate dissatisfaction.

During the exploratory study for external publics, it was determined that almost 50 % of people rarely or never interact with the university's external communication channels, even though the largest percentage of people belonged to the academic or business sector. The most used channels are social media and personnel directly linked to the university; the website and email (fundamental tools for formal communication) are not used by a large number of people. The perception of the clarity, updating, and relevance of the information received was not high, hovering around 50 %. People identified the most addressed topics as the university's academic achievements and scientific events; topics involving collaborations were the least mentioned, reaffirming the unidirectional and self-referential nature of external communication. Communication is

also not fulfilling its persuasive objective from the perspective of external publics, with only 40 % acknowledging having made a decision based on information communicated by the university. As a positive aspect, only the strength of this institution's identity is highlighted. The overall satisfaction level with the university's external communication was low. The website was evaluated favorably, with 61 % of definitions correct. Figure 4 shows the distribution by indicator.

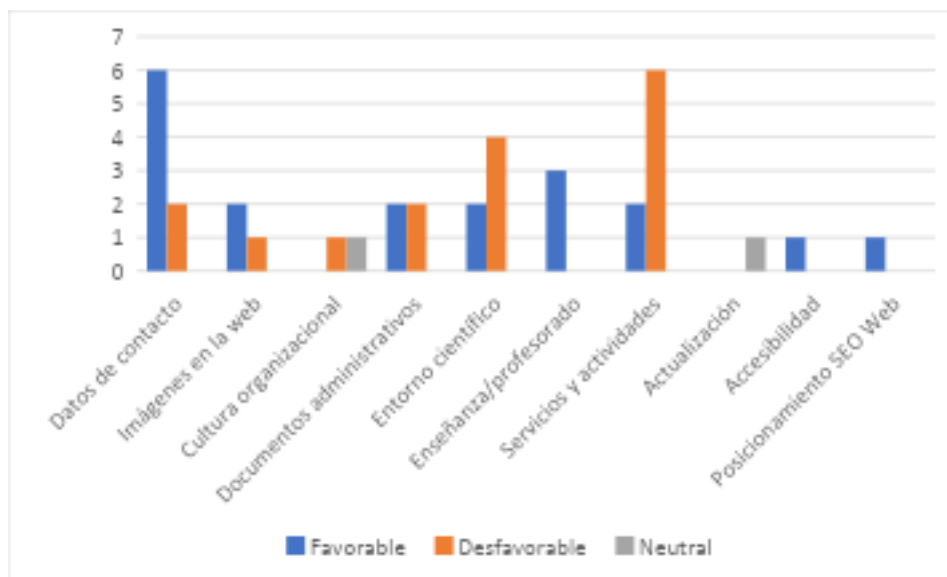


Fig. 4 - Evaluation of the university website

The university currently has an official presence on the digital social networks Facebook, Instagram, X, and WhatsApp. The multi-channel presence was favorable, as was the level of activity on X according to the government policy on the use of this social network. However, its presence on networks like LinkedIn and GitHub is abandoned, despite having a potentially valuable follower base in the former case, with over 14 thousand. In the specific case of the WhatsApp channel, although intended for internal publics, being a public channel, people outside the university can follow it. Weaknesses such as inconsistencies in digital identity due to variations in names and errors in promoted links were detected. In this latter aspect, the promotion of the university's disused channels, channels leading to error 404, and unreliable information sources like Wikipedia should be noted.

The applied compensatory fuzzy logic mathematical model yielded a truth value of 0.42 for the proposition "Organizational communication in the university is effective" (where 1 is absolute truth). This result indicates that the proposition is "more false than true." Analyzing the compound variables, communication management (G) obtained the lowest value (0.38), followed by external communication (0.45) and internal communication (0.49).

Discussion

The results show that the management of organizational communication in the university differs significantly from the strategic and transversal role attributed to it by specialized literature in the context of contemporary higher education. The phased methodology adopted captures the systemic nature of the problem, a depth that would be difficult to achieve with methods focused on a single dimension. The theoretical conception of communication as an essential process for internal cohesion, identity construction, and external projection clashes frontally with an operational reality marked by improvisation and a lack of structure.

The robustness of this diagnosis lies in the methodology's capacity to relate evidence. The substantial non-compliance with the regulatory framework, identified in Phase 2 of documentary analysis, is not a mere formal deficiency but a symptom of a lack of institutional prioritization that prevents communication from transcending its operational state and consolidating as the facilitator of culture and management proposed by theory. The structural characterization in Phase 3 corroborates this by showing the insufficient staffing and obsolete technological infrastructure, which constitute insurmountable material constraints for any aspiration of modern management. This structural weakness finds its echo in the perceptions gathered in Phase 4. The predominantly neutral evaluation by internal publics and the significant level of dissatisfaction, particularly in fostering participation, indicate that communication is not fulfilling its socializing role. The primacy of informal social networks as the preferred channel evidences a pragmatic adaptation of the community in the face of the failure of official channels, a finding supported by the technical analysis in Phase 5, which detected inconsistencies and inefficiencies in the formal digital channels.

It is in the integration of these dimensions that the methodology demonstrates its greatest value. The application of the compensatory fuzzy logic mathematical model in Phase 6 allows for a quantitative synthesis of the simple and complex predicates into a global evaluation. The fact that the "Communication management" (G) variable obtained the lowest value is the most revealing finding, as it unequivocally points to the core of the problem being systemic and related to leadership. This result confirms the qualitative findings and endows them with precision, answering the research question with greater certainty. The issue is not isolated deficiencies in channels or tactics, but a failure in the management model itself. For the university to achieve the ambitious goals of its strategic project and comply with its social and normative mandate, it is imperative to close this gap between theory and practice, redefining the place communication occupies in the governance structure and assigning it the resources and strategic importance that literature and new times demand.

Conclusions

The research yields the following conclusions:

1. The comprehensive diagnostic evidences that organizational communication in the studied university is ineffective, constituting an obstacle to achieving its ambitious strategic goals and its projection as a center of excellence.
2. Communication management is identified as the critical link, characterized by reactive operability, a severe insufficiency of human and technological resources, and widespread non-compliance with the national regulatory framework, preventing its development as a strategic function.
3. The neutral or negative perception of internal publics reflects a functional disconnection between formal channels and the needs of the university community, where structural and technological barriers limit participation and favor the use of informal channels, such as social networks.
4. External communication shows low impact and limited persuasive capacity, being centered on the unidirectional emission of information rather than dialogue or relationship building, resulting in low interaction and satisfaction among its key audiences.
5. The application of the compensatory fuzzy logic model quantitatively validates the qualitative diagnostic, synthesizing the global performance as "more false than true" and confirming that the ineffectiveness is systemic, rooted fundamentally in management.
6. The university must transform its operational model into a strategic one, prioritizing resource allocation, professionalization of human capital, technological updating, and alignment with institutional planning to close the gap between communicational aspiration and reality.

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Conflicto de intereses

Los autores declaran que no hay conflicto de intereses.

Contribución de cada autor:

Talía Farramola Crespo: Concepción y diseño del trabajo, recolección y obtención de resultados, análisis e interpretación de datos, redacción del manuscrito, revisión crítica del manuscrito y aprobación de su versión final

Marta Beatriz Infante Abreu: Concepción y diseño del trabajo, redacción del manuscrito, revisión crítica del manuscrito y aprobación de su versión final, supervisión de la investigación.