WWW.IJRPR.COM

**International Journal of Research Publication and Reviews**

Journal homepage: www.ijrpr.com ISSN 2582-7421

# Digitalization and Institutional Communication: When AI and Big Data Reshape Exchanges

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**ABSTRACT:**

The digital transformation, driven by artificial intelligence (AI) and Big Data, is revolutionizing institutional communication. AI automates interactions while personalizing them through data analysis, and Big Data provides companies with the insights needed to better understand their audiences and adjust messages in real-time. These technologies offer significant advantages, such as increased responsiveness and efficiency, but they also present technical, human, and ethical challenges. Implementing these innovations requires robust infrastructures, specialized skills, and strict management of data privacy. Despite the numerous obstacles, organizations that overcome these challenges can optimize their exchanges with stakeholders and enhance their competitiveness in a constantly evolving environment.

**Keywords:** Digital Transformation, Corporate Communication, Data Analytics, Automation, Personalization.

## Introduction

Digital transformation is profoundly redefining institutional communication by integrating technologies such as artificial intelligence (AI) and big data. AI allows businesses to automate simple and complex tasks while providing more personalized and engaging interactions. Chatbots and virtual assistants, for example, optimize responsiveness by providing instant responses to frequent requests, 24 hours a day, while relieving human teams of repetitive tasks. This not only saves time, but also improves the efficiency of exchanges within organizations.

Big data plays a key role in facilitating the collection, analysis and exploitation of vast volumes of data, thus enabling more targeted and relevant communication. Businesses are now able to better understand the needs and expectations of their audiences through in-depth analysis of behaviors and interactions. This not only allows messages to be customized according to stakeholder preferences, but also allows them to react more quickly to market changes and emerging trends, improving their competitiveness and adaptability.

However, this transformation is not without its challenges. The adoption of AI and Big Data requires strong technological infrastructures and specialized skills in data science and artificial intelligence. In addition, organizations must manage concerns about personal data protection, comply with regulations like GDPR, and overcome resistance to change among their employees. Despite these obstacles, the potential benefits of integrating these technologies are considerable and pave the way for more agile and effective corporate communication.

This article therefore proposes to explore the impact of these emerging IT technologies on institutional communication, through a review of the literature, and shows how they are transforming organizational practices in different sectors.

## Artificial Intelligence: automation and personalization of institutional communication

Artificial intelligence is now at the heart of human interactions, with impressive capabilities to simulate intelligent behaviors (Gunkel, D. J. 2017). It is transforming the way companies interact with their stakeholders. Today, this goes beyond automating simple tasks; rather, it focuses on the integration of advanced AI solutions that enable more personalized and engaging communication experiences. According to Huang and Rust (2018), AI improves the speed of responses and learns via *machine learning* based on past interactions, which allows for continuous improvement in the quality of exchanges.

Some of the most common applications of AI in this area include chatbots and virtual assistants. These tools provide automatic answers to frequently asked questions, 24 hours a day, making it easier for companies to be responsive. Lu et al. (2019) note that chatbots can respond quickly and handle massive volumes of requests, relieving human teams of repetitive tasks to focus on high-value assignments and innovation.

At the same time, sentiment analysis, another example of the use of AI in corporate communication, helps companies better understand the emotions expressed in feedback, whether on social networks or through internal surveys, in order to adjust their responses more precisely.

With speech recognition tools, a simple meeting can be converted to text in an instant, making it easy to manage minutes without extra effort. In addition, AI also makes it possible to automate the creation of content such as emails or press releases, while personalizing these messages for each recipient, creating more targeted and effective communication.

AI goes even further with virtual assistants, such as those developed by various international firms such as Amazon and Google. These systems are able to handle more complex tasks, such as managing appointments or organizing calendars, allowing employees to focus on more strategic tasks. Kaplan and Haenlein (2019) explain that these tools have the potential to transform the way companies manage their communication, through tailor-made solutions tailored to the needs of each user.

One of the major strengths of AI lies in its ability to personalize exchanges. By analyzing large amounts of data on user behavior, companies can adjust their messages based on individual preferences. Gentsch (2019) explains that AI allows for a better understanding of people's needs and the provision of tailored solutions, which promotes stakeholder engagement and satisfaction. By anticipating user needs, AI transforms communication into a personalized and dynamic dialogue.

In addition, AI allows businesses to react quickly to changes. As mentioned by Kietzmann et al. (2018), artificial intelligence has the ability to automatically adjust communication strategies based on user feedback, making interactions more fluid and responsive.

Several companies have already implemented AI solutions to improve their internal communication. Companies like IBM are using virtual assistants to help their employees quickly access internal information or resolve human resources issues, improving process efficiency and employee satisfaction.

As a result, machines become interlocutors capable of understanding, learning and adapting to the course of conversations, which transforms traditional practices of institutional communication (Gunkel, D. J. 2017).

**1. Big Data: Towards Data-Centric Corporate Communication**

Big Data is emerging as a key driver in the transformation of organizations, especially in the way they communicate with their audiences. It's no longer just about collecting data, but about extracting concrete, actionable insights and insights that give companies a better understanding of other actors. As Mayeer-Schönberger and Cukier (2013) reveal, the analysis of large amounts of data allows companies to react more quickly and in a more relevant way to the expectations of their audiences.

Big data allows companies to move from standardized communication to highly personalized communication. With the data collected on stakeholder preferences and behaviors, companies can tailor their messages in a targeted way, resulting in a more engaging and individualized experience. Chen et al. (2012) specify that the use of Big Data in communication makes it possible to "personalize interactions at scale, which optimizes the impact of messages and the engagement of the relevant audiences.

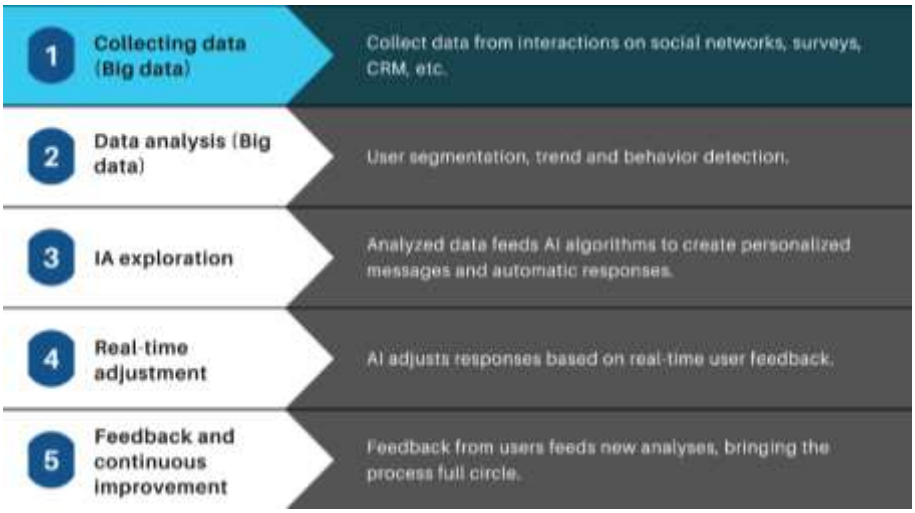
Big Data makes a difference in external and internal communication as well. Businesses can analyze their communication processes and flows to improve efficiency and collaboration between teams. As Davenport (2014) notes, analyzing internal data can identify inefficiencies and improve decision-making, based on hard facts rather than assumptions or hunches.

Big data also plays a key role in crisis and risk management. Companies that leverage this technology are able to monitor their stakeholders' reactions in real-time, anticipate emerging trends, and dynamically adjust their communication. McAfee and Brynjolfsson (2012) explain that data analytics allows companies to react quickly to market changes, allowing them to reduce the risks associated with sudden or unexpected changes.

Of course, embracing Big Data in corporate communication is not without its challenges. Managing a massive volume of data and having the skills to analyze it is a complex task for many organizations. According to Gartner (2020), while the opportunities presented by Big Data are considerable, companies need to invest in strong infrastructure and train their staff to maximize profits.

This diagram presents in a synthetic and visual way the process of integrating Big Data and artificial intelligence into institutional communication.

**Figure 1** : Process of integrating Big Data and Artificial Intelligence into institutional communication




***Source:*** Authors

This approach enables organizations to create more responsive, targeted, and engaging institutional communications by leveraging objective data and intelligent automation.

**2. The interconnections between these technologies: synergy and complementarity in institutional communication**

Recent advances in AI are mainly due to the use of new machine learning algorithms that require large databases and significant computing power (Askenazy, P., & Bach, F. 2019). That's why the integration of artificial intelligence and big data into institutional communications creates a powerful synergy that transforms and improves the way companies communicate. These technologies, when used together, provide remarkable complementarity. AI makes it possible to automate and personalize exchanges, while Big Data provides the information necessary for this personalization by analyzing user behaviors and needs.

When these technologies are combined, they reveal all their capabilities. AI relies on the vast volumes of data generated by big data to adjust its responses and interactions based on user preferences. As Gandomi and Haider (2015) point out, AI can only really work optimally if it is fed with massive and varied data, which allows it to refine its algorithms and make interactions more relevant. In other words, big data acts as the engine of artificial intelligence by providing it with the information needed to personalize communications.

One of the concrete examples of this synergy can be seen in the customer service industry. Companies like Zendesk use AI-powered chatbots to answer customer questions in real-time, and rely on data analytics from big data to adjust their responses based on individual user needs.

This complementarity between these technologies allows companies to offer a fluid and responsive communication experience. AI improves efficiency through process automation, and big data refines the relevance of messages.

**3. Challenges and limitations of IT technologies in corporate communication**

The integration of IT technologies into corporate communication has many advantages, but it also presents various challenges. One of the first hurdles businesses face is technological complexity and infrastructure requirements. Adopting solutions such as artificial intelligence and big data requires considerable resources. Infrastructure needs to be regularly updated, and this involves costs and investments in human skills. Jeffery, M. (2010) points out that the implementation of these systems requires specific technical expertise, which can represent a barrier, especially for small structures that do not have the necessary resources to fully benefit from these tools (Ouskou, R. et al. 2023).

Another aspect that is often underestimated is resistance to change. The introduction of new technologies is transforming organizational processes as well as the internal culture of the company. Many employees, especially those who are less digitally savvy, may be reluctant to adopt these new ways of working. Venkatesh and Davis (2000) have shown that the perception of technological complexity directly influences the acceptance or rejection of these technologies by employees. Thus, without adequate support and training programs, the adoption of these technologies can face significant resistance.

Artificial intelligence, on the other hand, while useful for automating certain communication tasks, also shows limitations. While AI systems can effectively handle simple requests, they are often unable to understand the intricacies of complex human interactions. Shneiderman (2020) points out that AI, while effective for automated responses, cannot compete with human intelligence when it comes to showing empathy or discernment in complex situations. In addition, the lack of transparency in the operation of AI algorithms poses problems of accountability and trust.

This table below provides an overview of the main challenges organizations face when adopting technologies such as Artificial Intelligence and Big Data as part of their corporate communication.

**Table:** Summary of the challenges of adopting IT technologies in corporate communication

| Challenge Category | Challenges | Description |
|---|---|---|
| **Technological challenges** | **Complexity of algorithms** | The need to master advanced machine learning and data analysis models for optimal use of AI and Big Data. |
| | **Infrastructure needs** | Need for powerful servers and storage capacities to process large volumes of data and run AI algorithms. |
| **Human challenges** | **Resistance to change** | Employee reluctance to adopt new technologies, which can hinder digital transformation and require change management strategies. |
| | **Specialized skills** | Lack of data science and AI skills within teams, forcing companies to invest in training or recruiting specialized talent. |
| **Legal and ethical challenges** | **Data Privacy** | Compliance with regulations such as the GDPR, to guarantee the security and confidentiality of user data. |
| | **Algorithm transparency** | Issues related to the opacity of decisions made by AI algorithms, raising questions of accountability and trust among users. |
| **Organizational challenges** | **Implementation costs** | Financial investments needed to acquire technology, set up infrastructure and train staff. |
| | **Adaptation of internal processes** | Need to modify communication processes to take advantage of new technologies, implying internal reorganization. |

***Source:*** Authors

The table shows that the adoption of AI and Big Data in institutional communication goes far beyond the simple technological dimension. This is a fundamental change that affects internal practices, the skills of teams and compliance with the rules in force. While these technologies promise many benefits, their deployment requires careful planning and tailored support to overcome the challenges. For their digital transformation to be successful, companies must adopt a holistic approach, taking into account technical, human, ethical and financial issues.

## Conclusion

In conclusion, the integration of artificial intelligence and big data is transforming institutional communication by allowing companies to personalize their interactions and automate critical processes. These technologies allow for a smoother management of information flows while responding to the needs of audiences in a faster and more targeted way. Organizations that adopt these innovations can thus deliver more engaging communication experiences, strengthening their competitive position in the market.

However, the adoption of these technologies presents companies with complex challenges. The need for infrastructure, the need for specialized skills, and the management of ethical and legal aspects represent significant obstacles. To maximize the benefits of AI and Big Data, it is essential to invest in team training, change management, and the implementation of rigorous strategies to ensure data privacy and transparency.

Ultimately, companies that are able to overcome these technical, human, and organizational challenges will be able to fully exploit the benefits offered by AI and Big Data. In this way, they will succeed in creating more responsive, targeted, and sustainable corporate communication systems, strengthening their links with their stakeholders and ensuring greater competitiveness in the digital age.

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