

1.INTRODUCTION

The integration of ICT in public relations management within public institutions involves adopting modern technology to enhance performance, promoting electronic applications instead of paper, and providing comprehensive training programs in modern technology for all employees. Public institutions have implemented integrated digital systems to streamline their operations and improve their interaction with the public through the internet.

The effectiveness of information and communication technologies as PR tools is contingent upon their application. It is essential to adopt policies that maximize the use of these technologies.

New communication channels, such as social media platforms, are extensively used within government organizations, and leveraging their potential can significantly enhance organizational communication. Moreover, it is imperative to allocate necessary resources and support to bolster the effectiveness of public relations departments in engaging with the public through electronic means.

In our study, we employed a descriptive approach to examine the role of ICT in modernizing public relations practices within public institutions. This investigation highlights best practices such as leveraging technology to improve performance, transitioning to paperless processes, and providing comprehensive ICT training for employees. Furthermore, it underscores the importance of a strategic approach to implementing ICT to maximize its effectiveness as a public relations tool.

The primary question addressed in this research is: How can information and communication technology enhance the management of public relations within public institutions?

Algerian public institutions face significant challenges in effectively utilizing ICT to develop public relations practices. These challenges stem from the absence of integrated strategies and the lack of necessary skills to utilize this technology effectively.

This research aims to bridge a crucial knowledge gap experienced by Algerian public institutions by providing a practical analysis of how ICT can improve public relations practices and enhance communication effectiveness with the public. Objectives include identifying best practices in the use of ICT for managing public relations, analyzing digital strategies and the challenges of their implementation in Algeria, understanding the impact of modern technology on public relations management, and identifying the challenges faced by public institutions in Algeria in using ICT.

To achieve these objectives, the study involves a comprehensive review of previous scientific literature on the role of ICT in public relations management, focusing on best practices and global approaches. The methodology includes a descriptive analysis of secondary data from multiple sources and interviews with experts in public relations and ICT within Algerian public institutions.

We posed the following problem :How can ICT enhance public relations management within public institutions?

This research is crucial as it addresses a significant gap in the knowledge and practices of public relations management within Algerian public institutions. By analyzing and proposing effective

ICT strategies, the study aims to enhance communication and interaction between public institutions and the public.

Research Objectives

1. Identify best practices in the use of ICT for managing public relations.
2. Analyze digital strategies and their implementation challenges in Algeria.
3. Understand the impact of modern technology on public relations management.
4. Identify challenges faced by Algerian public institutions in using ICT.

The study employs a descriptive approach, analyzing secondary data from multiple sources and conducting interviews with experts in public relations and ICT within Algerian public institutions.

2.Definitions

-Technology

There are many definitions that have dealt with technology, and we will mention some of them below:

Technology is the process of transforming a scientific idea from a theoretical cognitive state into a practical one, that is, converting it into a productive commodity, equipment, devices, tools, and means. These are used by people in the performance of various tasks or functions so that these machines and equipment can provide service to individuals, society, and the state alike at the level of practical reality (Mounir Baalbaki, 1998).

Many people think that the concept of technology is mainly related to the tools and machines that are made. This, in terms of science, is a misconception. Technology is, in fact, the human mind thinking about how to manage life better by utilizing machines, tools, and equipment that offer better service than previous methods (Abdulmalik Radman Al-Danani, 2005).

Regarding information technology, it is similar to other modern terms that have not received a unified definition, resulting in multiple and varied definitions. We will discuss the most important ones:

First definition: Information technology is considered a product of the synergy and integration of both computer technology and communication technology (Mourad Rais, 2005).

Second definition: Information technology is the use of modern technology to capture, process, store, retrieve, and deliver information, whether in the form of digital data, text, voice, or image (Roger Carte, 1991).

Third definition: Information technology encompasses all types of technology used in the operation, transmission, and storage of information in electronic form. It includes computers, communication devices, interconnection networks, fax machines, and other equipment.

Fourth definition: Information technology is considered a product of the synergy and integration of both computer technology and communication technology (Mourad Rais, 2005).

In summary, information technology is a field concerned with the processing of information, focusing on the processes of capturing, storing, and processing information, as well as its transmission (communication). It is also considered a suitable product of the integration of both computer technology and communication technology.

-Concepts about information

The large size of organizations and the complexity of their activities and business operations may lead to an increased need for methods and tools to collect, analyze, and classify information. This facilitates the operations carried out by the organization and informs its decision-making processes. The success of enterprises in their economic activities depends on their ability to obtain and utilize information, as information plays a crucial role in the overall functioning of the enterprise. The following figure illustrates the importance of information in the enterprise.

A simplified definition of information necessitates differentiating between data, information, and knowledge. Data is the raw material from which information is derived. It represents things, facts, ideas, opinions, events, and processes that express attitudes and actions or describe a particular phenomenon or reality without any modification. In essence, data is the raw material for obtaining information and is collected from various internal or external sources, either as ready-made or primary, oral and documented, official or unofficial.

Information, on the other hand, is data that has undergone processing, analysis, and interpretation to extract comparisons, indicators, and relationships that connect facts, ideas, and phenomena. Information is the processed material (data) ready for use. Knowledge is the refined (extracted) material from information. It is the result of what an individual, institution, or society possesses in terms of information, science, and culture at a specific time. Knowledge is a deductive summary or outcome of data and information.

These terms (information and data) are often used interchangeably in scientific contexts to describe similar concepts, despite their distinct meanings. Thus, at the beginning of any discussion about information and data, it is essential to clearly define each term to achieve a correct understanding of data processing.

The term "information" generally refers to facts, opinions, events, and processes exchanged in public life. Since the smallest unit of information is called "data," a person receives information daily from various sources such as the media, interpersonal communication, information banks, or any sensory observation of phenomena. As users of these facts and opinions, individuals can produce information when they communicate with others through conversations, letters, telephone calls, or other means.

For news, facts, and opinions exchanged by people to be considered information, the content must be logically organized to form knowledge or experience, enabling it to be presented or studied systematically. The concept of information extends beyond its communicative form in natural language; it can include recorded material, correspondence through creative and artistic works, facial expressions, gestures, and organic reactions, among others.

The word "information" is derived from the Latin term that meant teaching and transmitting knowledge. In medieval France, "information" referred to the process of collecting, transmitting,

and officially documenting knowledge. Contemporary meanings of the term are derived from its French Latin origin.

Information can be understood as the manifestation of facts and opinions, as well as perceptible knowledge, presented in forms that can be read, heard, seen, sensed, or tasted. Drawing from this understanding, we can define information more precisely:

"Information is data that has undergone processing to enhance its utility to the individual, whether it holds immediate perceived value or potential usefulness for future decision-making."

-Definition of communication

There is complete agreement on the need for an effective communication system within enterprises, but there is a difference in defining the exact nature of communication. Communication has been defined as the transfer and perception of ideas, information, feelings, and meanings between individuals and groups. "Koontz and colleagues" defined the art of communication as: "The transmission and transfer of information from the sender to the receiver with the necessity of the receiver understanding the information."

MacFarland defines communication as: "Communication broadly is a process of meaningful interaction between individuals." (Tommy Dallal, Jribaie Sara, 2009)

Public relations experts describe communication as: "Communication is a two-way street and therefore it is the strongest factor that ensures both parties understand each other's points of view, work to fulfill their desires, and unite them in the common good." (Mohamed Farid El-Sahn, 1998)

The communication process means "the delivery of information and understanding in order to achieve the desired change in others. Therefore, it is a process consisting of at least one sender and one receiver, where information and understanding are sent from the sender to the receiver, and then feedback is provided to the sender regarding the impact it has had." It also refers to the means used to transfer data during the information cycle (recording, tabulation, storage, retrieval, use). (Musa Taha Al-Hajlouni, 1989)

From this, we can derive a simplified definition of communication as: "Revealing the necessary and subtle elements that exist within the enterprise, facilitating relationships between various internal individuals (such as workers, employees) and external entities (such as suppliers, customers, banks)."

3.Improving the management of public relations in public institutions using information and Communication Technology

ICT can be used to enhance and improve PR management processes, for example, e-mail and websites can be used to provide accurate and up-to-date information to the public, and provide answers to inquiries and complaints in a short time.

By using social media, the organization can better interact with the public, listen to their opinions and feedback. Information and communication technology can also be used in crisis

management and emergency communication, adding a modern character to the communication process between the organization's personnel, whether internal or external.

Using text messages and mobile applications, an organization can send important warnings and updates to the public in emergency situations, organize virtual meetings for quick decision-making.

The use of ICT in improving public relations management in public institutions enables the institution to enhance transparency and trust, improve communication with the public, and improve its strategies based on public feedback.

4.Digital public relations strategy

Algeria has implemented many digital systems to facilitate work and interaction with the public through the internet, including the adoption of electronic payment systems such as the instant gross settlement system and the electronic clearing system for payments

he country has also developed a strategy to support the digital transformation of the Algerian economy. Algeria has made significant progress in seismic monitoring through the installation of a new digital Seismic Network, which allows real-time communication and data transmission via various media including the internet(Salaheddine Cheriet, Hadjira Ghanem, 2018) .

the network has undergone major upgrades, with the number of stations increased from 25 to 69, including broadband, ultra-broadband and short-period stations equipped with an accelerometer.

The stations are managed by the Antelope software from Kinemetics and are connected in real time using various transmission methods such as satellite, internet and mobile phone. The network covers most of northern Algeria, and 70 GPS stations have been added to strengthen the seismic network. The goal is to improve data quality, increase network density by adding 50 new stations, reduce processing time and reduce the time required to send an alert message(Abdelkrim Yelles-Chaouche, T. Allili, A. Alili, W. Messemen , 2013) .

Moreover, there is a need for tools to encourage and promote scientific production, especially in the field of agricultural research. These digital systems and strategies aim to modernize and develop the Algerian economy, improve access to services, and enhance innovation and performance in various sectors.

Digital platforms have been developed in Algeria for various purposes. One of these platforms focuses on information and mathematical modeling of agricultural lands, providing automated monitoring, analysis, and optimization of crop growth conditions. The digital platform aims to visualize the boundaries of spatial and temporal heterogeneity of crops and their habitats, emphasizing crop growth conditions.

The platform includes an automated calculation model that considers agrochemical indicators in relation to soil conditions, climatic fluctuations, and microclimatic changes. Its tasks involve monitoring, analysis, forecasting, and improving crop growth conditions at the local and average level of natural and economic zones. Additionally, the platform integrates information on

the author's information, the three-dimensional geometric structural model of the surface of the field relief, facilitating the extraction of morphological characteristics and calculation of current lines determining material movement along geographical ranges. Agrochemical inspection and analysis data are incorporated into the field relief to provide crop information.

The digital platform for accurate and ecologically balanced smart agriculture in Adygea focuses on automated visualization and analysis of crop growth conditions, considering various factors such as soil conditions, climatic fluctuations, and microclimatic changes.

The Algerian government has established special bodies to manage and regulate the ICT sector. However, there is no official body or system specialized in cybersecurity, as the task falls under the overall responsibility of MPICT.

Another platform is the Moodle e-learning platform used by Batna 2 university for online learning and e-course publishing used by Batna 2 University in Algeria to publish courses and conduct online sessions for all degrees of study (Hanane Zermane, Samia Aitouche, 2020), including the Department of industrial engineering.

Learning management systems solutions are being launched to transfer digital educational resources into a consistent knowledge system and services

However, the development of digital platforms in Algeria has faced challenges. The country tried to develop ICT, but faced obstacles due to the lack of political will and the collapse of oil prices (Messiliti Nabila, Benzaama Salima, Benzidane Hadj, 2019).

Despite the challenges, Algerian youth are investing in various sectors of the digital economy, creating a stimulating ecosystem for the development of ICT, and the government needs to reconsider its strategies and take measures to promote the digital economy, such as adopting technological education, encouraging research and innovation, attracting investments in the ICT sector, enacting legal legislation to protect users, and promoting e-commerce by small and medium-sized businesses.

In the context of e-government initiatives, Algeria's efforts have been criticized for being fragmented and lacking coordination and information exchange (Robert Hilbe, 2021).

In addition, digital spaces of remembrance were created by former European settlers in Algeria, using scanning postcards from the colonial era to reconstruct the lost terrain of the country (Beatrice Amelia Ivey, 2022).

Many other digital platforms have also been developed in Algeria to enhance interaction between the public, public institutions, and companies. For example, a digital recruitment platform has been launched that allows companies to publish job opportunities and for citizens to submit job applications online. Applications are processed, and suitable candidates are selected faster and more efficiently. This provides job opportunities for young people and contributes to the development of the country's economy.

If the development of digital systems in Algeria has contributed to facilitating the work of the government and communicating with the public through the internet, these systems enhance

transparency and efficiency in the provision of services and help improve the administrative process. Algeria can lead in the field of digital systems and their applications, promoting sustainable development and benefiting citizens and the country faster and better.

5.The impact of modern technology and modern communications on the management of public relations in Algeria

The impact of modern technology and modern communications on the management of public relations in Algeria is significant. The integration of digitization into society has triggered global changes in the communicative, economic, and social spheres, necessitating the application of specialized communication skills and new forms of social interaction between organizations and target audiences.

Following the COVID-19 pandemic, the adoption of digital health initiatives has positively influenced behavioral changes for public health and protection. Technological advancements have also brought about transformations in the field of PR practice, with the emergence of interactive communication channels and the widespread use thereof.

At the Sudanese telecommunications company (Sudatel), modern technology has had an impact on the performance of various departments, including public relations, where senior officials encouraged its use and promoted electronic applications (Abdlewahab Ahmed Abdallah, 2020) .

Modern technologies that can be used in the management of Public Relations include a variety of tools

6. The challenges facing technology and modern communications in Algeria

The challenges of modern technology and communication in Algeria include the positive and negative effects of the information revolution and the spread of modern communication tools

The Algerian legislator intervened to provide criminal protection for information systems and electronic transactions, but there are still difficulties in achieving information security and protecting freedom of information, the COVID-19 pandemic also had a significant impact on the educational sector, which led to the need to switch from face-to-face learning to online learning (Aziza KORAN, 2022) .

However, this transition poses challenges for both teachers and learners, including the lack of intercultural communication skills necessary for virtual participation, in addition, the integration of information and communication technologies (ICT) in formal teaching in Algeria faces challenges such as the quality of internet connectivity, limited time, lack of effective training .

Furthermore, the effectiveness of e-teaching and e-learning in the Algerian university system is hampered by the limited availability of e-materials and the need for virtual learning training and teaching methods (Sihem Boubekeur, 2022).

However, there are institutions that rely heavily on meetings and seminars, while modern technologies such as computers and e-mail are used less, and technological means aimed at

facilitating communication and strengthening relations with the public. These techniques can be classified into several categories (Hana Bin Zarafa, 2021) including :

1. Mobile phone.
2. The internet and the evolution of its network.
3. The intranet is extranet.
4. E-mail address.
5. Remote meetings.
6. Personal computer (computer).
7. The satellites.
8. Remote communications such as cables and optical fibers.
9. Video Tex.
10. Facsimile (telephone copier).

These technologies are an essential part of modern PR management strategies and contribute to improving communication and building relationships with the target audience

There are studies that have concluded that modern technologies play an important role in public relations, as they contribute to improving and facilitating communication processes with the target audience, which enhances the effectiveness of public relations and contributes to building a positive image of the institution.

Organizations can reach a wider and diverse audience, both at the local and global level, which increases the impact of PR management efforts, and also provides tools for data analysis and understanding of audience behavior and needs, enabling organizations to optimize their strategies and adapt them to the needs of the audience.

Modern technologies contribute to increasing the efficiency and effectiveness of PR management processes, reducing the costs and effort spent in implementing PR strategies (Ataylia Lamia, 2023) .

7. Proposed Solutions

According to a study of a sample of professors from Abdelhamid Ibn Badis University in Algeria, the majority of faculty members use modern communication technology (MCT) in the educational process, by 73.52% (The Usage of Communication Technology in Algerian Universities, 2023).

We believe that the e-tourism infrastructure should be developed to improve the quality of information and the quality of tourist services, and enable the state to benefit from the global

benefits of the tourism industry

Moreover, the Algerian Legislature has taken measures to protect information systems from cybercrime by making amendments to the Penal Code and enacting new laws for the criminal protection of electronic transactions, as a result of which new information and communication technologies should be adopted in addition to changes in media structures and practices in Algeria.

8. Conclusion

In summary, our research underscores the pivotal role of technology and modern communications in public relations management, offering substantial benefits in communication enhancement and relationship building with the target audience.

The results are as follows :

- Technology utilization in public relations fosters improved communication quality and bolsters relations between economic institutions and the public.
- Leveraging social media and internet platforms enhances external communication and cultivates stronger relationships with customers and business partners.
- Technology integration facilitates enhanced internal communication, fostering better coordination among different departments within economic enterprises.
- Embracing technology enhances the customer experience, thereby improving public relations overall.
- Despite the evident advantages, potential challenges confront the integration of technology in public relations. It is imperative for economic institutions to identify and address these challenges proactively.

In essence, our study emphasizes the imperative for Algerian public institutions to implement effective digital strategies. It also provides actionable recommendations for officials in these institutions to navigate and surmount the challenges associated with ICT utilization effectively.

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