Assessment Of Electronic Administration Implementation In Algerian Educational Institutions: A Field Study In Bordj Bou Arreridj

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Abstract:

This study examines the shift in Algeria's educational sector, specifically primary education, toward electronic administration within the context of organizational change aimed at enhancing problem-solving capabilities. Through a field survey in Bordj Bou Arréridj, employing a descriptive methodology and data collection via questionnaires, the study diagnoses the methods used, application areas, and encountered challenges. Findings show that electronic administration methods are limited, with usage confined to specific areas. Additionally, the shift faces significant organizational, financial, and technical obstacles, preventing full implementation and revealing the need for strategic improvements to achieve comprehensive digital integration.

Introduction

The continuous and rapid technological and technical advancements have led to profound changes in various structures and systems, altering patterns of communication and social interaction, among other shifts in the overall framework and philosophy of life. This transformation has significantly impacted institutions of all types, bringing about a qualitative shift in the practice of professions and functions within these institutions. Job functions have evolved from traditional methods to modern approaches that integrate and employ technology, creating roles that rely on structured and organized technical and informational systems.

To keep pace with these advancements, it has become essential for educational institutions worldwide to integrate technology within the educational sector and leverage it effectively. This integration is necessary to enhance, develop, and elevate the performance of educational institutions, especially in the administrative aspect, aiming to establish successful and efficient management. By making good use of this technology in educational administration and offering a range of digital services, institutions can improve their overall quality and performance, thereby reducing the digital gap between us and developed countries.

Electronic administration is a new administrative approach based on the informed adoption and use of information and communication technologies in performing essential administrative functions within organizations in the era of globalization and constant change. It is a virtual system that enables an institution to fulfill its obligations to all stakeholders using advanced electronic technologies, disregarding the constraints of time and place while ensuring quality. Electronic administration represents the effective utilization of all information and communication technologies to streamline daily administrative processes, both within the institution and in its interactions with other institutions or relevant parties(Al-Qahtani, 2017: 226).

Integrating technology into school administration can significantly boost the success of educational reform, as this process relies on the coordination of administrative, scientific, and pedagogical elements. For reform to be effective, these areas must work in harmony, with technology or electronic administration embedded throughout—whether in planning, execution, or improvement programs—to fully achieve intended goals.

Accordingly, the prospects for transformation depend on the extent to which technological system development mechanisms are applied and work methods within educational institutions are modernized. By adopting a technological approach, institutions can shift from traditional paper-based, bureaucratic administration to a modern electronic administration based on digitalization and transparency, eliminating time-consuming paper processes. Electronic administration is characterized by its efficiency and speed, positively impacting the flow of operations within educational institutions.

Accordingly, most countries have worked to implement electronic administration in their operations and in a variety of institutions, aiming to replace traditional administration with modern management that employs technology in education. There have been increasing calls for integrating modern technology and tools, as these have become essential in all aspects of life. Thus, it is logical for technology to be present within the educational system, given its role as one of the most important institutions in society.

For decades, Algerian public institutions have been characterized by several bureaucratic features widespread across most sectors. This coincided with the transformations brought by the technological revolution, which pushed modern institutions to consider organizational and administrative alternatives that meet society's growing needs. This shift has led institutions to seek higher performance levels and reach new heights of creativity and professional excellence. They have done so by establishing objective standards to structure individual performance within institutions, investing in human capital, and preparing it to face changing circumstances, especially when adopting high-level technical strategies. These essential aspects require a strong focus on human resources and effective communication to serve both administrative interests and the needs of citizens(Fawzia, 2021: 8).

Algeria is among the countries adopting technological administration to achieve comprehensive quality in managing, structuring, and organizing educational practices. The country has embraced digitalization in management and organization to keep pace with technological and knowledge advancements, in line with Marshall McLuhan's concept of technological inevitability. There is no alternative to embracing technological progress in education, both for educational reform and for growth and development in the field of education. Consequently, it became essential for the Algerian state to implement reform plans that integrate technology into administration. This initiative has already begun to take shape through digitalization, with educational institutions increasingly digitizing a substantial part of their interactions and adopting new concepts unfamiliar to the educational community, families, and society as a whole. Schools now operate according to digitalization principles, which marks a step into the realm of technology and tech-based education, raising many questions about the future of technology and digitalization in education.

Based on the above, the following problem statement arises:

What is the reality of electronic administration implementation in Algerian educational institutions?

This study is based on two main hypotheses. The first hypothesis suggests that implementing electronic administration in Algerian educational institutions faces multiple challenges, including organizational, financial, and technical obstacles, which hinder the full deployment of this system and limit the educational sector's ability to leverage digitalization benefits in enhancing performance and efficiency. The second hypothesis proposes that electronic administration positively contributes to improving the efficiency and effectiveness of administrative performance within educational institutions, as it accelerates processes and reduces paper dependency, thus enhancing the quality of services provided to students and their parents. However, the success of this transformation requires adequate technical resources and training for personnel capable of effectively using these technologies.

1. The Concept of Context

1.1 Electronic Administration

It is the non-material exchange of various digital data between different public administrations and between public administration and citizens. This exchange should not be limited to simply providing administrative transaction templates online; rather, it should encompass various administrative operations by using different automated information systems to supply transaction models.(Hamma, 2022: 21)

It is the transition from completing transactions and providing public services through traditional methods to an electronic format for optimal use of time, money, and effort. In other words, "electronic administration" refers to conducting administrative transactions and providing public services over the internet, so clients do not have to visit administrative offices in person, thereby avoiding unnecessary time and energy expenditure. Electronic administration is based on a new concept that goes beyond the modern idea of "contact without moving," advancing it to "connect online without standing in line.(Al-Qahtani, 2017: 232)"

Based on the above, e-administration can be defined as: a set of technological tools, methods, and fields used in the management of educational institutions, aimed at employing electronic technologies in the administrative operations of the General Directorate of Education

in Bordj Bou Arreridj, to achieve the outlined objectives with minimal effort and time, and with greater efficiency and effectiveness(Hamad, 2015: 208).

It is a set of procedures and services provided by the administration of the educational institution (primary schools) through the use of the internet and information technology for clients (students, parents, staff, higher authorities, and other institutions they interact with in their social environment).

For its part, Tambouris (2001) defined e-administration through the use of technology and the internet as a tool to provide services to citizens, businesses and other entities. Thus, electronic administration is a radical change in the management of public information to provide enhanced services to citizens, whether private, business, or other public structure.

According to the OECD, e-government covers "the use of e-government technologies information and communication (ICT), and in particular the Internet, and as a tool for aimed at setting up a better-quality administration" (Ayouda & Hadidene, 2021, pp. 587-596)

1.2 The Educational Institution:

It is a public facility for education and learning, dedicated to upholding the fundamental principles of public service in education. It ensures the implementation of pedagogical activities and supplementary activities for the benefit of students, in accordance with the action plan for educational instructions and activities, as well as the annual work programs approved by the Ministry of National Education. Educational institutions are composed of teaching staff, supervisory and service staff, advisory bodies, structures, equipment, and financial and material resources, all mobilized in the service of the students(People's Democratic Republic of Algeria, 2018).

1.3 Operational Definition:

It refers to the group of primary educational institutions responsible for overseeing and ensuring the teaching and learning process for first-level primary school students. These institutions consist of an administrative team led by the principal and a teaching staff comprising all the teachers responsible for the pedagogical aspect.

2. Materiels and methodes

2-1 Methodology:

The methodology followed in this research is the descriptive approach, as it suits the study of social and educational phenomena. We collected facts and information specific to the topic of the current state of e-administration in educational institutions in Algeria to diagnose it, explore its methods and fields, identify obstacles to its implementation, and derive and analyze a set of results.

2.2 Description of the Study Field:

The study was conducted through a comprehensive survey of all units within the study population, encompassing all 98 primary schools in the city of Bordj Bou Arreridj. However,

due to various reasons, it was not possible to collect all the questionnaires, and we limited our analysis to 90 questionnaires.

2.3 Data Collection Tools and Techniques:
A questionnaire was designed on the topic, containing 11 questions divided into three main sections:
- **Section One:** Focuses on the methods employed in implementing e-administration in educational institutions in Algeria.
- **Section Two:** Concentrates on the areas of e-administration application in educational institutions in Algeria.
- **Section Three:** Deals with the difficulties of implementing e-administration in educational institutions in Algeria.

3. Results
This section is dedicated to presenting and analyzing the data obtained from the field study, as well as discussing the findings of the study in light of the data that has been presented and analyzed.

Table 01. Distribution of Study Sample Members by Personal Data

Variable	Categories	Distribution		Total	
		T	%	T	%
Gender	Male	73	%75	90	%100
	Female	17	%25		
Age	[35-42]	16	%55	90	%100
	[42-49]	41	%25		
	[49-56]	33	%20		
Seniority in position	[01-05]	15	%10	90	%100
	[05-10]	30	%13.5		
	[10-15]	45	%28.5		
Year of first use of e-methods	[02-05]	15	%10	%10	%10
	[05-08]	24	%13.5	%13.5	%13.5
	[08-10]	51	%28.5	%28.5	%28.5

3.1 Gender Variable:
From Table (01), we find that the majority of respondents are male, making up 75%, while the remaining 25% are female. Despite the dominance of women in staffing Algerian schools, as part of the growing participation of women in the workforce in recent decades, public administration statistics show there are over 275,000 women in this field.

From the data in the table, we find that males dominate more in administrative positions (school administration), despite the dominance of women in staffing Algerian schools in recent decades as part of the growing participation of women in the workforce.

According to statistics published by the National Statistics Office for 2021-2022, the number of primary school teachers was estimated at 218,167, of whom 179,406 were women, making up 82.23%(ONS, 2022: 01). Most women occupy teaching positions, while most male roles are in administrative positions due to the demands of these roles, which require certain skills and capabilities. These administrative roles often require significant effort, which many women may avoid, possibly due to family commitments and other factors and circumstances that lead women to shy away from assuming administrative positions.

3.2Age Variable:

According to the data in the table, the majority of respondents (45.55%) are between the ages of 42 and 49, followed by the 35-42 age group at 36.67%, and finally the 49-56 age group at 17.78%.

We conclude from the table that the role of school principal tends to be concentrated in the older age groups. This is due to promotion, seniority, and experience in the field on the one hand. On the other hand, the role of school principal is central to the educational process, requiring many daily and weekly tasks and responsibilities, such as attending seminars and meetings, and providing resources to ensure the institution runs smoothly(Education, 2016). This demands sufficient experience, which aligns with the seniority variable, where we found that 50% of the respondents have between 10 and 15 years of experience, followed by 33.33% with 5 to 10 years of experience, while 16.67% have between 1 and 5 years of seniority.

In this regard, two committees were established: the first is responsible for project leadership, while the second is a technical committee composed of engineers and technicians, tasked with implementing the program within the education directorates according to a pre-defined schedule.

Phase One: The design and development of a web application by the technical teams, following a series of meetings attended by experts in the field.

Phase Two: After successful testing of the application, the process of information collection and data entry began in all education directorates, initially focusing on the secondary level. The middle and primary levels will be included in the second phase.

The application includes three main programs:

- Employee Management Program ;
- StudentEnrollment Management Program ;
- Infrastructure Management Program.

Table 2. Data on School Internet Connectivity

	N	%
Yes	71	78.88%
No	29	32.22%
Total	90	100%

From the table, we find that 78.85% of respondents believe that their school administration is connected to the internet, while 32.32% feel their school administration is not connected. It is notable that a significant proportion of schools remain disconnected from

the internet despite the Ministry of Communication's efforts to cover all areas with internet access. However, with advances in communication and the introduction of fourth and fifth-generation networks, internet connectivity is no longer limited to wired connections; the world has moved beyond wired to wireless connections. This has greatly facilitated connectivity without the need for extensive equipment, leading some school administrators to use their private networks to carry out administrative tasks electronically.

Table .03. Data on Areas and Methods of Implementing E-Administration

Areas of E-Administration Implementation	N	%	Total N	Total %
Pedagogical Area				
Report Generation and Grade Entry	13	86.67%	15	05.56%
Interactive Lessons (Maps, Microphone, etc.)	1	06.66%		
Inspector Monitoring of the Educational Process	1	06.67%		
Administrative Area				
Electronic Record-Keeping of Student and Teacher Data	82	46.86%	175	64.81%
Tracking Teacher Activity	12	06.86%		
Office Work (School Schedules, etc.)	81	46.28%		
External Area				
Parent Portal	65	81.25%	80	29.63%
Document Retrieval	10	12.5%		
Communication and Coordination with Supervisory Bodies	5	06.25%		
Total			270	100%
Methods of E-Administration Implementation	**Electronic**	**Paper-Based**	**Total**	
Registrations				
Registration Announcements	90	34.88%	36	75.00%
File Submission	85	32.95%	5	10.42%
Appeals and Transfers	83	32.17%	7	14.58%
Total	**258**	**47.6%**	**48**	**15.79%**
Communications and Coordination				
Sending Ministerial Notices	90	35.02%	-	-
Monitoring	80	31.13%	10	76.92%
Statistics	87	33.85%	3	23.08%
Total	**257**	**47.42%**	**13**	**04.28%**
Interaction with Other Institutions	**Electronic**	**Paper-Based**	**Total**	
Social Security	12	44.44%	78	32.1%
Unions	14	51.85%	76	31.27%
Civil Society Organizations	1	3.71%	89	36.62%

Total	27	04.98%	243	79.93%
Overall Total	**542**	**64.06%**	**304**	**35.94%**

The data in the table above indicates that 64.81% of respondents consider the administrative field to be the most frequently utilizing electronic methods, especially for data storage and electronic record-keeping at 46.86% and 46.28%, respectively, followed by tracking teacher activity at 6.86%. The external field follows at 29.63%, primarily focused on student registration within the parent portal at 81.25%, then document retrieval at 6.25%. The pedagogical field ranks last at 5.66%, with the main activity being report generation and grade entry at 86.67%, followed by inspector monitoring of the educational process and interactive lessons using technological media, both at close percentages of 6.67% and 6.66%, respectively.

Based on the above data, we conclude that Algerian schools are gradually transitioning to the use of electronic methods in the administrative field, particularly for data storage and administrative tasks such as creating programs and schedules, which streamline administrative processes and save time and effort. This shift does not require advanced technology or specialized expertise, aligning well with the goals of Algerian schools. It highlights the importance of keeping pace with global advancements in administration and integrating through strategies, planning, resource allocation, and human resource development. Consequently, there is a need to establish a technological infrastructure compatible with human capacity building to fully transition from traditional to electronic administration in educational management, achieving a comprehensive rather than partial shift to e-administration.

The table shows that schools are moving towards the use of communication technologies to engage with partners and parents through the parent portal, which facilitates student registration processes, such as transfers and appeals, as well as document retrieval and coordination with supervisory bodies, especially the Directorate. However, the use of electronic methods and technological media in the pedagogical field remains very limited, focusing solely on report generation and grade entry. Teaching and the educational process largely still rely on traditional methods, despite the Ministry's efforts to activate this area, notably through digital tablets as an initial step for pedagogical application. This aligns with the aspirations of Algerian schools to keep up with advanced educational systems and establish a new educational philosophy and curriculum grounded in technological advancements, integrating these technologies into educational reform efforts to elevate the quality of education to match global progress.

Table 4. Data on Electronic Communication Methods for Schools

School Connectivity	Website		Social Media Page		Email	
	N	%	N	%	N	%
Yes	---	---	24	07.5%	90	92.5%
No	90	100%	66	100%	-	07.5%
Total	90	100%	90	100%	90	100%

The data in the table shows that schools lack dedicated websites, highlighting a technical lag prevalent in many sectors of the country. This reflects a general disinterest in integrating

technology into public life, particularly at the institutional level. The absence of school websites can be attributed to several reasons: creating and maintaining a website requires a specialist to establish, monitor, and develop it, and there is often a lack of motivation to create a dedicated school website. Additionally, more advanced and flexible alternative platforms have emerged that can substitute for a website despite its significance. Recently, most institutions have shifted to using social media as a platform for information, announcements, and communication, with a considerable following, especially from parents. Social media now serves as a bridge between the educational community as a whole and parents by providing informational services.

Table 04. Data on Difficulties in Implementing E-Administration

Difficulties	N	%	Total N	Total %
Organizational				
Lack of Digitization Department	43	68.25%	63	39.62%
Low Human Resource Competency	20	31.75%		
Financial				
Lack of Equipment	33	62.26%	53	33.33%
Internet Bill Payments	20	37.74%		
Technical				
Weak Internet Speed and Outages	33	76.74%	43	27.05%
Ineffective Digital Platform	10	23.26%		
Overall Total	**159**	**100%**	**159**	**100%**

The table shows that 39.62% of respondents highlight organizational difficulties as the primary challenge, with the lack of a digitization department accounting for 37.75%. Financial difficulties rank second at 33.33%, mainly due to a lack of equipment (62.26%), followed by issues with paying internet bills (37.74%). Finally, technical difficulties account for 27.05%, led by weak internet speed and frequent outages at 76.74%, followed by the ineffectiveness of the digital platform at 23.26%.

We conclude from the table data that school administration faces several challenges and obstacles that hinder the implementation of e-administration, particularly organizational barriers, such as the absence of a dedicated digitization department responsible for these processes. Principals often rely on administrative staff to handle these tasks, creating a gap between the educational administration's direction toward employing technology and the issue of establishing a dedicated body or department to manage the school's technological administration.

Accordingly, the necessity of having a dedicated digitization and e-administration department for schools has become evident, employing specialists to fulfill this role. Other challenges have also emerged, such as the low competency of available human resources for school administration due to limited training and additional pedagogical and administrative burdens, which hinder the electronic administration of schools. This task requires specialists dedicated to handling administrative work and managing schools digitally.

In addition to the previously mentioned difficulties, material challenges persist, including inadequate and outdated equipment that fails to ensure the quality of electronic services. This is especially significant given global technological advancements, with artificial intelligence signaling a shift towards comprehensive technology adoption across all sectors and functions to simplify and accelerate services. This trend moves jobs from traditional to advanced practices, fully utilizing all available technologies and tools. Therefore, it reinforces the importance of integrating technology in school administration.

4. Discussion

The Ministry of National Education has sought to change its organizational practices in school administration through a series of actions and procedures aimed at reforming, renewing, and developing its structures and internal and external relations to achieve effectiveness and efficiency in reaching its goals. Thus, it is working to transition from traditional administrative practices to a management approach based on digital knowledge organization. This shift follows a schedule and strategy established years ago to keep up with rapid growth in the sector, both structurally and in human resources, as the sector now includes over 80,000 employees and more than 11 million students.

The Ministry aims to expand digitization-related efforts to cover 16 areas, including school grant payments, digital registration, creating a digital space for students, and digitizing processes related to the issuance of school certificates and report cards, all with the ultimate goal of implementing a "Zero Paper Policy."

This is the goal expected from the stakeholders and the organizational change policy in the sector. However, the reality presents different facts and insights, which our study aimed to diagnose. We concluded the following:

▪ Despite the beginnings of the transition towards digitizing school administration and adopting electronic methods—according to the respondents—dating back several years, these changes have not covered all the planned areas. They are mainly confined to the administrative field (office tasks) such as storing student and teacher data, scheduling lessons, and tracking teacher activities. Communication with the supervising authority (the Directorate of Education) has primarily occurred via email alongside traditional mail (dispatch tables). A digital platform has also been established to interact with parents, initially allowing new student registrations, transfers, appeals, and access to student results. This system facilitated school entry for the 2024/2025 academic year. However, some limitations were noted: some parents were unable to register their children on time due to limited digital literacy, while others lacked the resources to complete the registration process online. Consequently, some parents turned to internet cafes to complete the process (incurring additional costs), or they went directly to the school to submit paper documents, with electronic registration to be completed later by the school administration.

▪ The teaching and learning process, along with pedagogical procedures, has not experienced significant change and remains largely traditional (limited to assessment and report generation). This contrasts with the initial plans, as we note the absence of the e-book, which was supposed to be distributed to over 5 million students. Similarly, the use of digital tablets in teaching is also absent.

▪ The shift toward digitizing the education sector and managing it electronically, like any organizational change, has faced a range of obstacles and challenges:

Organizational Difficulties: These include the absence of a dedicated digitization department within school administration and a lack of technical specialists, relying instead on administrative staff who lack the necessary skills for e-administration and show little interest in adopting this approach, arguing that it falls outside their responsibilities and expertise. (There is a missing link in the change process, which is the adjustment of the legal framework for those involved in and affected by this transformation.) As a result, this change process lacks positive engagement and conscious participation, with insufficient involvement of all parties impacted by the change (each person being informed of their role and responsibilities). This highlights the importance of training and awareness sessions on the significance of this change, alongside reviewing the system of material and moral incentives. Employees need to feel they are not merely following orders without understanding their objectives and purpose, but rather are important stakeholders in the process. The success of this transition depends on their understanding, cooperation, and commitment.

Financial and Technical Difficulties: There is a shortage of suitable tools and equipment necessary for the transition to e-administration (modern computers and accessories, software, etc.) and ensuring high-speed internet connectivity, especially during peak times (school entry, exam result announcements, etc.).

Conclusion

The Ministry of National Education has undertaken a strategic initiative to modernize school administration, aiming to shift from traditional practices to a fully digital organization. This comprehensive reform is designed to enhance efficiency and effectiveness across the education sector, supporting over 80,000 employees and 11 million students. As part of this shift, the Ministry has targeted the digitization of 16 key areas, including student registration, digital portals, and the issuance of report cards, with the ultimate goal of achieving a "Zero Paper Policy."

This transition toward digitization and e-administration represents a strategic organizational change that addresses essential challenges. It is not only a transformation in operational practices but also a developmental step toward advancing schools from a traditional model to a technologically advanced system. However, such a shift requires a long-term approach and relies heavily on strategic planning.

Despite these efforts, the transition faces significant obstacles. Limitations in the digitization of the pedagogical process, the absence of a dedicated digitization department, insufficient technical expertise, financial constraints, and outdated equipment continue to hinder the full implementation of e-administration. Addressing these issues is essential to realize the Ministry's vision for a fully digitized educational administration.

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