The Adoption of Boti Application in Moroccan Education: Institutional Staff's Attitudes

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Abstract
This study examines the digital transformation within the Moroccan education sector through the implementation of Boti, a management information system (MIS), in selected private primary and higher education institutions. To achieve this objective, a survey was administered to 101 staff members from three private primary and higher education institutions to assess their perceptions and experiences with the application. The findings indicated a notable shift from traditional paper-based methods and basic digital tools (e.g., Microsoft Word, Excel) to the use of Boti for various administrative and pedagogical functions, including attendance tracking, grade management, lesson planning, and access to student and teacher data. All respondents reported adopting the system without resistance, with the majority considering it easy to manage and maintaining its use for a period exceeding six months. Participants also reported several benefits, notably enhanced time management, improved communication, and more efficient data centralization. Nevertheless, challenges such as technical difficulties and unreliable internet connectivity were identified, underscoring the need for infrastructural improvements to support effective long-term integration.

Keywords — Primary and higher education, Morocco, Digital change, Management information system.

1. Introduction

MIS are essential tools for enhancing efficiency within academic institutions [1]. Such systems provide centralized digital platforms for managing student, staff, and financial records [2]. These systems facilitate key administrative functions such as attendance tracking, assessment scheduling, financial management, and curriculum planning [3]. Globally, the adoption of MIS has grown significantly, driven by their ability to streamline institutional operations [1]. In Morocco, recent educational reforms have promoted digital transformation to improve both student outcomes and institutional management. While platforms like Massar are widely used in primary and secondary education [4], higher education institutions employ a range of systems, resulting in a fragmented digital landscape [5].

MIS are increasingly adopted in educational institutions, yet their practical dynamics remain underexplored [6]. In Morocco, recent reforms have emphasized integrating technology to enhance students' digital competencies and improve institutional management. Consequently, academic institutions have recently started to digitalize teaching, learning and administrative processes [4]. At the primary and secondary levels, a management information system called, Massar, is widely used to handle administrative and pedagogical tasks [4], [7], while higher education institutions present a more varied landscape, with platforms differing by institution and department [5]. Despite their growing use, research on the effectiveness of these systems is limited [8]. To address this gap, this study investigates staff experiences with Boti, a MIS implemented in Moroccan private higher education institutions.

2. Literature review

The digital transformation of education, once considered a passing trend, has become a strategic necessity for institutions seeking efficiency, transparency, and alignment with 21st-century skills [9], [10]. Central to this shift are MIS, such as Boti—introduced in 2018—which support academic and

administrative functions across all education levels [11]. Such a MIS supports lesson planning, monitors student progress, and enhances communication with parents, thereby fostering trust between families and the school [12]. Furthermore, MIS provides administrators with tools, such as dashboards, for data-driven decision-making, resource management, and performance reporting [13], [14].

Although using MIS in higher education offers undeniable advantages, its implementation is not without challenges and can involve significant risks if not properly addressed [15]. In terms of data ethics and governance, the extensive collection of student information raises critical issues related to confidentiality, consent, and control. This can lead to a form of "data pressure" that may negatively affect teaching practices and undermine the autonomy of key stakeholders [16], [17]. In addition, insufficient preparation, resistance to change among staff and faculty, and the widening gap between rigid software systems and the evolving needs of users are persistent obstacles that can diminish expected benefits and generate unforeseen costs [15].

Within the Moroccan context, scholarly research on the implementation and functioning of MIS in higher education institutions remains notably scarce [18]. International studies consistently highlight the essential role of MIS in enhancing decision-making [19], improving administrative efficiency [20], and supporting academic quality [21]. However, these benefits are still under-researched and insufficiently documented in Moroccan universities. In order to contribute to the limited national literature on MIS, the present study examines the use of Boti—a management information system widely adopted in the Moroccan education sector, particularly within private institutions. It seeks to explore the experiences of both employees and administrators who use Boti in primary and higher education settings.

3. Methodology

3.1. Research question

The present study addresses the following research question:

What are institutional staff's attitudes and experiences with Boti application in managing instructional and administrative tasks?

3.2. Participants

The participants in the present study were 101 institutional staff members, working in three Moroccan private primary and higher education institutions. Among them, there were 33 administrators and 68 professors (see table 1).

Table1. Professional roles of the staff members

Profession	Number
Administrator	33
Professor	68
Total	**101**

Regarding participants' ages, most fell within the 25–54 range. As illustrated in Figure 1, the largest proportion—33.66%—was between 35 and 44 years old. This group was followed by those aged 25–34 (27.72%) and 45–54 (23.76%). Participants aged 55 and above represented 12.87%, whereas individuals younger than 25 comprised the smallest segment at only 1.98%.
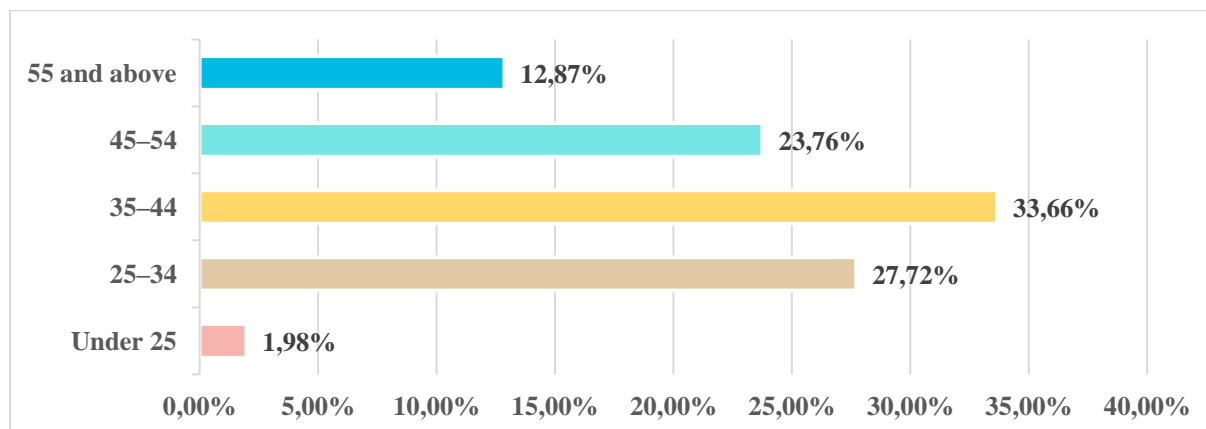
Figure 1. Institutional staff's age distribution

With regard to staff professional experience, the participants can be described as a largely experienced workforce. As shown in Figure 2, the largest group had more than 10 years of professional experience (41.58%). Both the 1–3-year and 7–10-year groups accounted for 16.83% each, while 15.84% had 4–6 years of experience. The least represented group consisted of staff with less than one year of experience, comprising only 8.91%.
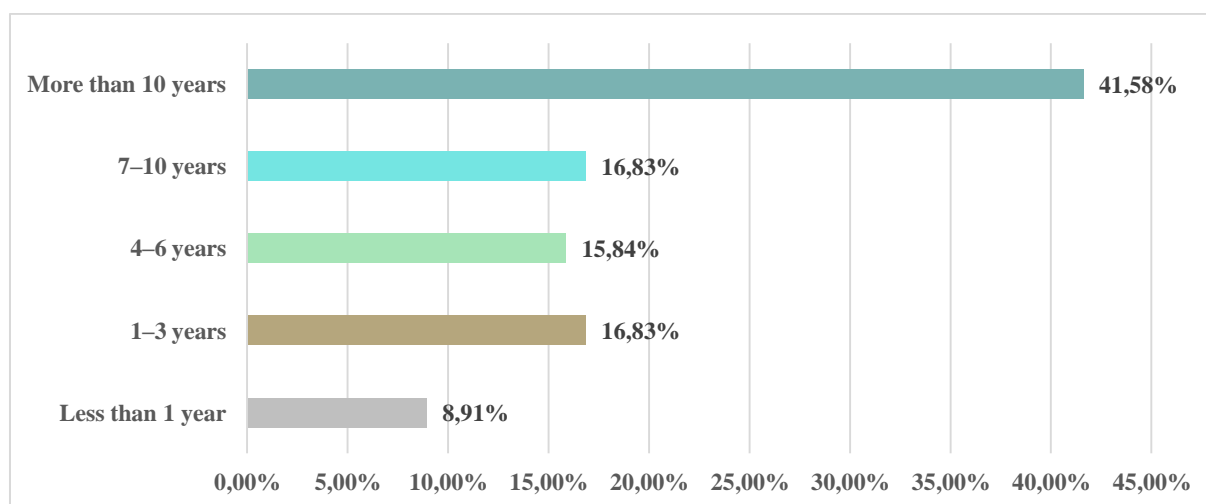

Figure 2. Institutional staff's working experience

3.3. Instrument and procedures

The data were collected virtually in two successive phases to ensure the representativeness of the sample. During the 2024–2025 academic year, the questionnaire was first distributed via WhatsApp to staff members of a private higher education institution in Tangier. As the initial response rate was low, a second phase was conducted by extending participation to staff from two private primary schools. After collection and coding, the data were statistically processed using Excel.

4. Results

The current study explores the experiences and attitudes of institutional staff members towards the use of Boti, a management information system, in Moroccan private primary and higher education institutions.

4.1. Institutional staff perception of Boti prior to its application

Before the implementation of Boti, most academic staff managed their instructional and administrative tasks using manual or semi-manual methods. Figure 3 shows that 54.46% of the staff relied on paper-based tools and 28.71% of them used standard software like Excel and Word documents, while only 16.83% employed alternative applications.
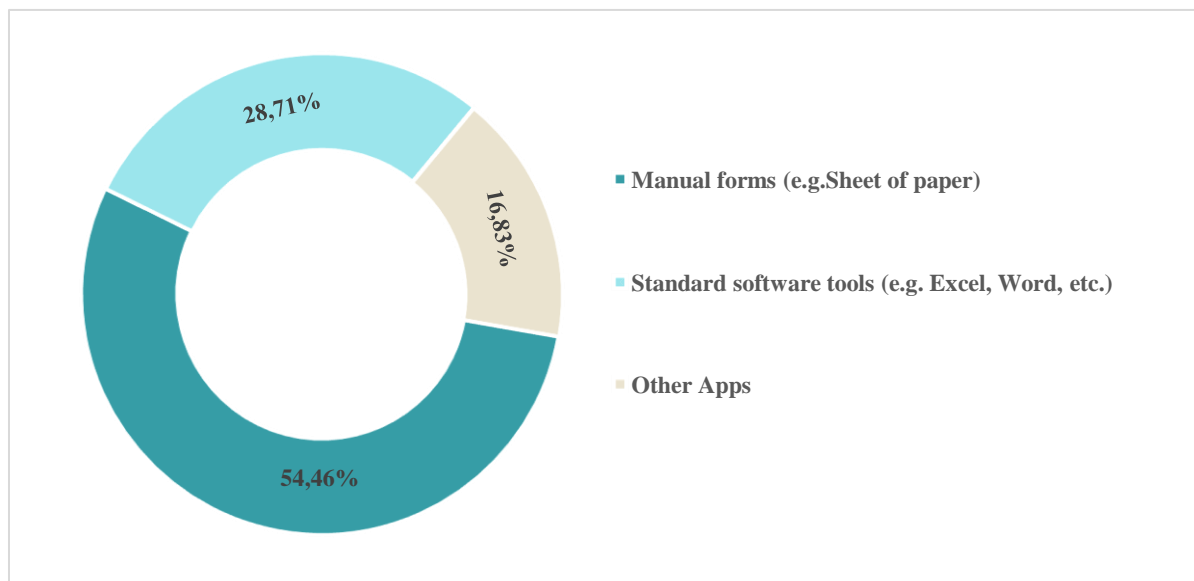

Figure 3. Staffs' methods for managing administrative and instructional tasks before Boti

Additionally, staff members showed strong support for Boti prior to its implementation. As illustrated in Figure 4, 39.60% of respondents were supportive, while 31.68% were very supportive of the application. In contrast, only 1.98% and 0.99% expressed reluctance or strong reluctance, respectively. Additionally, 25.74% of participants remained neutral.
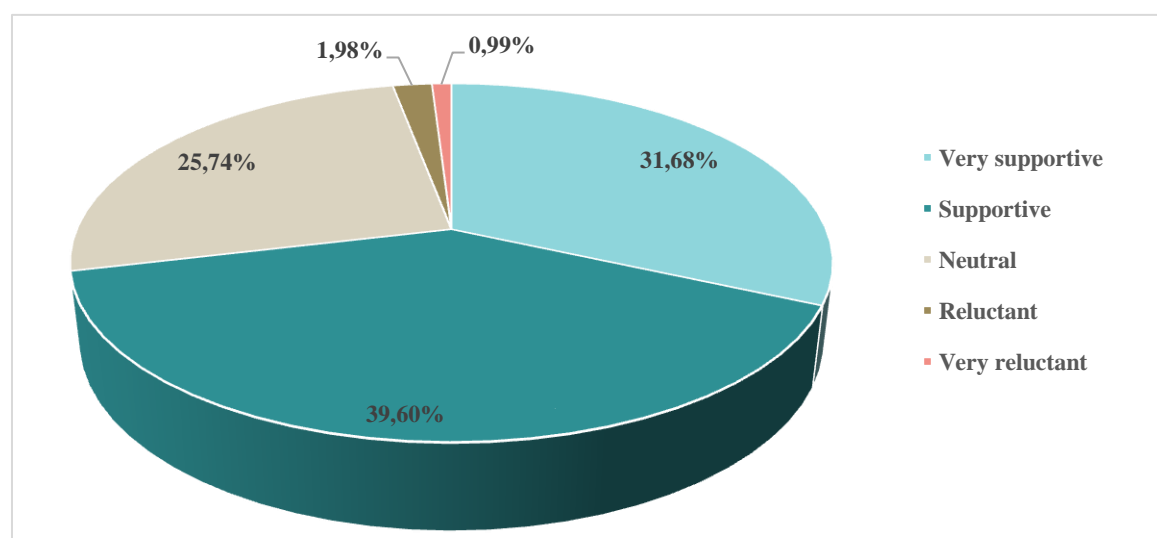

Figure 4. Institutional staff's initial support for Boti before its utilization

4.2. Institutional staff's experience with Boti

The majority of staff members had at least six months of experience using Boti which they considered easy to manage. Figure 5 shows that 45.54% of the participants used the application for more than one year, while 31.68% had between six months and one year of experience. Smaller groups reported usage of three to six months (15.84%) or less than three months (6.93%).
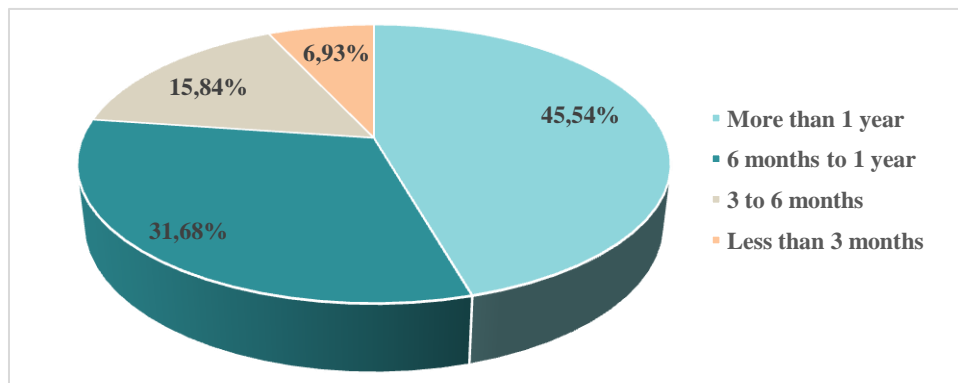

Figure 5. Iinstitutional staff's utilization of Boti

Regarding usability, most participants found Boti easy to manage. Figure 6 demonstrates that 51.49% of the participants considered the application easy to use, 24.75% very easy, and 17.82% were neutral. Only a small fraction found it difficult (4.95%) or very difficult (0.99%), indicating that the application was generally accessible and easy to navigate for institutional staff.
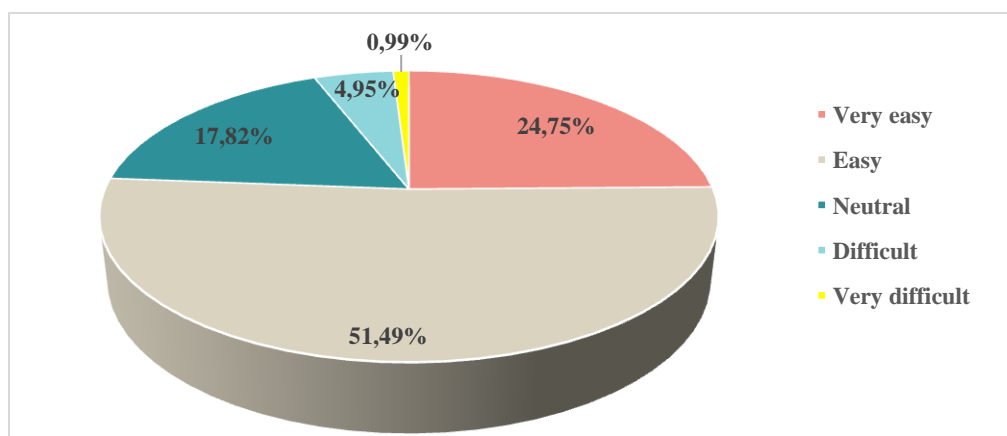

Figure 6. Staff members' ease of using Boti

4.3. Institutional staff's utilization of Boti functionalities

The platform facilitated the institutional staff's management of a wide range of instructional and administrative functions. The instructional staff reported that Boti was used in managing a number of tasks, especially marking attendance (19.58%), recording grades (17.72%), planning courses, sharing materials (12.43%), and accessing student and teacher databases (9.52%) (see table 2).

Table 2. Staff members' application of Boti functions

Functions	Percentage
Marking attendance	**19,58%**
Recording grades	**17,72%**
Planning of courses and sharing learning materials	**12,43%**
Getting access to students and teachers' data base	**9,52%**
Managing exam schedules	8,73%
Communicating (Sending notifications to students and employees)	8,20%

Getting dashboard for all the functions (e.g. classes, specialties, and modifications)	6,61%
Managing behavior and ensuring disciplinary follow-up	5,29%
Managing financial flows (payments, expenses, reporting, etc.)	5,03%
Managing customer relationships	3,97%
Managing students' final year projects	2,91%
Total	**100,00%**

4.4.   Institutional staff's evaluation of the effectiveness of Boti

Using Boti was widely recognized by the institutional staff as a valuable tool. As shown in Table 3, most respondents reported that Boti positively impacted their productivity, particularly by improving time management, task completion, and the centralization of data. Similarly, a large proportion agreed that the application enhanced communication between students and staff and facilitated teamwork. In terms of skills development, 43.56% of respondents agreed and an additional 43.56% strongly agreed that Boti improved their digital and IT competencies. Concerning personal development, 32.67% reported that Boti fostered their self-confidence and self-esteem, while 42.57% remained neutral.

Table 3. Institutional staff's evaluation of the effectiveness of Boti

Advantages	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Boti streamlines data centralization processes.	**46,53%**	**38,61%**	11,88%	2,97%	0,00%
Boti enhances communication between students and employees	**48,51%**	**34,65%**	12,87%	2,97%	0,99%
Boti improves time management	**45,54%**	**37,62%**	10,89%	4,95%	0,99%
Boti enhances efficiency in task completion	**37,62%**	**42,57%**	14,85%	3,96%	0,99%
Boti facilitates team work	**38,61%**	**34,65%**	22,77%	3,96%	0,00%
Boti boosts digital or IT skills	**27,72%**	**43,56%**	25,74%	1,98%	0,99%
Boti fosters a more confident and self-assured mindset.	19,80%	**32,67%**	**42,57%**	3,96%	0,99%

4.5.   Institutional staff's challenges with Boti

Using Boti was not without challenges for staff members. As shown in Figure 7, the most commonly reported issue was technical problems, such as app freezes, accounting for 27.88% of responses. Internet connectivity issues were equally common, also affecting 27.88% of the participants. Less frequently reported difficulties included certain features being hard to understand or use (11.52%), insufficient training (11.52%), and staff resistance (6.67%). Conversely, 20.00% of respondents indicated that they did not encounter any significant challenges while using the application.
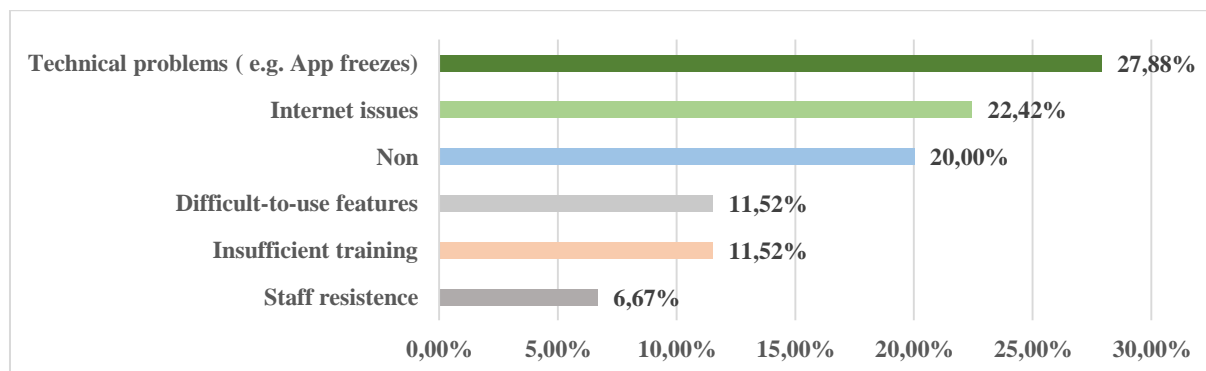
Figure 7. Staff members' difficulties with Boti

5. Discussion

This study investigates the attitudes of institutional staff in Moroccan private primary and higher education institutions in northern Morocco towards the use of the Boti application for managing academic and administrative tasks.

The institutional staff consistently engaged with the Boti application, which they could easy utilized. Prior to Boti's implementation, staff relied on manual forms and standard software like Excel and Word documents. Nevertheless, such forms presented limitations. For instance, as the volume of paper-based documents increased, requiring physical storage space and incurring high operational costs [22], accessing and retrieving information became increasingly difficult [23]. Thus, the transition to Boti was generally well-received, with most staff using the application for over six months and reporting it as easy to use. This therefore suggests successful integration into daily workflows, including tracking attendance, recording grades, planning courses, sharing materials, and accessing institutional databases. Similar findings were also confirmed by in-service teachers in [24] who utilized Moodle and Blackboard to post syllabus, assignments and grades through a grade book.

Staff members regarded the use of the application as beneficial on multiple levels. It was found that using the application has a positive impact on their productivity as it enhanced their time management and task completion. Furthermore, it streamlined student and teacher data centralization. Additionally, it boosted communication between staff and students as well as between the administration and employees. In this context, the studies referenced in [1], [25], [26], [27], [28] demonstrated that the implementation of MIS in schools significantly improved institutional efficiency and reduced the workload of educators by facilitating streamlined access to student information and enabling effective data sharing with relevant stakeholders, including parents. In a similar vein, the researchers in [29] found that regular engagement with technology platforms boosted teachers' ICT competencies and fostered their professional development.

Despite that the staff reported feeling comfortable using the application, they most encountered several difficulties. The most frequently cited issues were technical in nature—such as app freezes and unstable internet connections—which led to repeated disruptions. Comparable obstacles were reported in Indonesia, where similar technical problems impeded the smooth integration of ICT into academic programs [30]. Staff also faced challenges related to understanding certain app features and limited training opportunities. In line with these findings, researchers in [1], based on a survey involving 16 administrative and academic staff in Malaysia, likewise observed that inadequate training hindered users' ability to fully comprehend the functionalities of a Campus Management System, a form of MIS. Additionally, resistance to change emerged as another barrier to Boti's implementation. This reluctance may be linked to demographic factors such as age, with older faculty members showing less interest in adopting new technologies than their younger counterparts [31], [32], [33].

Conclusion

Despite that the institutional staff primarily relied on traditional methods for task management; the vast majority did not resist the institutional shift toward the adoption of the application. In fact, they found the system easy to use for managing various instructional and organizational tasks. Furthermore, they considered the utilization of the application beneficial on multiple levels. Nevertheless, they encountered some challenges such as technical problems and internet issues which need to be addressed for an efficient education.

In the light of these findings, the researchers propose two key recommendations for a quality education, which are as follows:

- It is essential for institutions to ensure reliable internet coverage and provide technical support. This is in order to reduce the difficulties encountered while using the application, particularly those related to internet instability and technical issues.

- Providing continuous training courses on Boti is needed. They would help them get familiarized with the application's features—some of which were previously considered difficult to manage. Furthermore, these courses would raise the staff awareness of the effectiveness of using MIS, especially that there was some staff resistance to its application as the present study confirmed.

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