

# Effectiveness of Digital Training for Educational Staff in Management Information Systems

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## ABSTRACT

*The rapid digital transformation in the education sector necessitates the effective utilization of Management Information Systems (MIS) by educational staff. This study evaluates the effectiveness of digital-based technical guidance in enhancing MIS competencies among administrative personnel. A quantitative research approach was employed, with data collected from 24 participants through pre-test and post-test assessments, surveys, and institutional records. The results indicate a significant improvement in participants' knowledge, with post-test scores increasing from an average of 3.21 to 4.45. Participants reported a 35% reduction in data entry errors and a 27% decrease in administrative processing time, demonstrating the training's impact on institutional efficiency. Additionally, the system utilization rate improved by 26%, highlighting increased confidence and adoption of digital tools. Findings further suggest that structured training programs lead to high participant satisfaction, with an overall rating of 4.33 out of 5. However, time allocation for practical exercises was identified as a challenge, indicating the need for more extensive hands-on sessions. Despite these positive outcomes, the study acknowledges limitations such as a small sample size and reliance on self-reported data. Future research should explore longitudinal impacts and assess the role of continuous training programs in sustaining digital competencies. This study underscores the critical role of technical guidance in equipping educational staff with essential digital skills, ultimately enhancing institutional performance. By implementing structured and continuous training programs, educational institutions can optimize digital transformation efforts and improve administrative efficiency. These findings provide valuable insights for policymakers and educators aiming to foster digital literacy in academic environments.*

## INTRODUCTION

The rapid advancement of technology has significantly impacted various sectors, including education ([Akour & Alenezi, 2022](#); [Haleem et al., 2022](#); [K. Zhang & Aslan, 2021](#)). Integrating digital technology in educational institutions has become essential to enhance efficiency, effectiveness, and accessibility in administrative and academic services ([Almpanis & Joseph-Richard, 2022](#); [Camilleri,](#)

2021; [Mohamed Hashim et al., 2022](#)). One of the key implementations of digital transformation in education is the adoption of Management Information Systems (MIS), which enables institutions to streamline operations, improve decision-making processes, and enhance service quality ([Lavidas et al., 2022](#); [Nguyen et al., 2021](#); [K. Zhang & Aslan, 2021](#)).

Educational institutions require a well-structured MIS to manage administrative tasks effectively, ensuring the seamless processing of student, faculty, and staff data. However, such systems' effectiveness largely depends on the educational staff's competency in utilizing digital tools and adapting to technological changes ([Chiu, 2024](#); [Kim & Jung, 2022](#); [M'mboga Akala, 2021](#)). Without adequate training, the potential benefits of digital transformation may not be fully realized, leading to inefficiencies in educational management ([Akour & Alenezi, 2022](#); [Bygstad et al., 2022](#); [Marks & Al-Ali, 2022](#)).

To address this challenge, technical guidance (training) programs are crucial in equipping educational staff with the necessary skills to operate digital management systems efficiently ([Almpanis & Joseph-Richard, 2022](#); [Bingwa & Ngibe, 2021](#)). Effective technical guidance ensures staff members are well-prepared to integrate technology into their daily tasks, reducing errors, improving productivity, and enhancing institutional performance ([Fraboni et al., 2023](#); [Pettersen et al., 2024](#)). However, the success of such training programs depends on multiple factors, including training content, delivery methods, participant engagement, and post-training application in the workplace ([Alenezi, 2023](#); [Chuang, 2021](#)).

Despite the increasing adoption of digital MIS in education, there remains a gap in understanding the actual impact of training programs on staff performance and institutional efficiency. Previous studies have primarily focused on the technical aspects of MIS implementation or the benefits of digital transformation in higher education, but limited research has examined how training interventions directly influence the effectiveness of educational staff in adopting digital systems. Additionally, many institutions implement training without a structured evaluation framework, making assessing whether such initiatives lead to measurable improvements difficult. This study seeks to bridge this gap by evaluating the effectiveness of digital-based technical guidance for educational staff, focusing on its impact on knowledge acquisition, behavioural changes, and institutional performance.

Several studies have explored the role of digitalization in enhancing administrative efficiency in educational institutions. Research by [Kommisetty & Dileep \(2022\)](#) found that implementing cloud-based MIS significantly improves data management and decision-making. Similarly, [Bygstad et al. \(2022\)](#) emphasized that the successful adoption of MIS depends on technology, user readiness, and institutional support. However, the literature highlights a lack of focus on training methodologies and their impact on staff performance, indicating the need for more empirical research.

Moreover, the Kirkpatrick Model of Training Evaluation suggests that the effectiveness of training should be measured at multiple levels: reaction, learning, behaviour, and results. Studies using this model in educational settings ([Alsalamah & Callinan, 2021](#)) have demonstrated that well-structured training programs contribute to long-term improvements in digital competency. However, many institutions fail to evaluate training effectiveness beyond immediate participant satisfaction. This research adopts a systematic evaluation approach to assess the actual impact of technical guidance on educational staff, offering insights into best practices for MIS training in higher education.

This study contributes to theoretical and practical discussions on digital transformation in education by examining the effectiveness of digital-based technical guidance. Theoretically, it provides empirical evidence on how training interventions influence staff performance, bridging the gap in existing research. Practically, the findings will help educational institutions, policymakers, and training providers design more effective professional development programs, ensuring that staff members acquire the necessary digital skills to maximize the potential of MIS. Additionally, the study highlights the importance of continuous evaluation and improvement in training methodologies, ensuring that digital transformation efforts lead to tangible improvements in institutional management and service delivery. Ultimately, this research supports enhancing efficiency, productivity, and innovation in educational administration through well-structured and effective training initiatives.

**METHODS**

**Research Design**

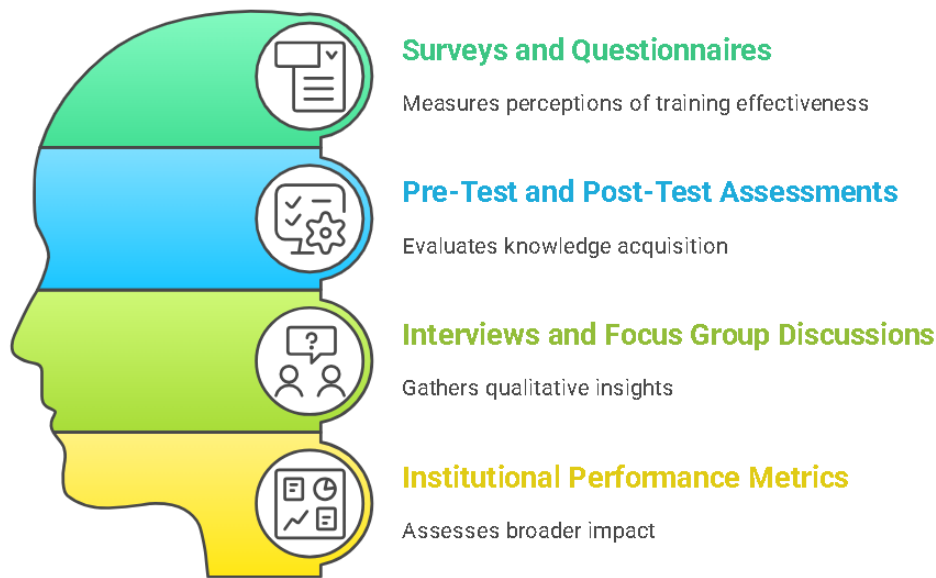
This study employs a quantitative research design with a descriptive evaluative approach ([Hirose & Creswell, 2023](#)) to assess the effectiveness of digital-based technical guidance for educational staff in utilizing a Management Information System (MIS). The research evaluates the training program based on participants’ perceptions, knowledge acquisition, behavioural changes, and overall impact on institutional efficiency. The Kirkpatrick Model of Training Evaluation (Reaction, Learning, Behavior, and Results) serves as the primary framework for assessing the effectiveness of the training program ([Kirkpatrick & Kirkpatrick, 2016](#)).

**Population and Sample**

The population of this study consists of educational staff involved in administrative and academic support roles within higher education institutions. The sample is selected using purposive sampling ([Robinson, 2023](#)), targeting individuals participating in the digital-based technical guidance program. The inclusion criteria include staff members actively using the MIS, those who have attended training sessions, and individuals responsible for administrative data management. The researchers included a total of 24 participants in the study.

**Data Collection Techniques**

The study employs both primary and secondary data sources:



**Figure 1. Data Collection Techniques**

The researchers obtained the primary data through surveys, questionnaires, pre-test and post-test assessments, interviews, and focus group discussions (FGDs). The questionnaire, designed with Likert-scale items, was distributed to participants to measure their perceptions of training effectiveness, engagement levels, and satisfaction. Pre-test and post-test assessments were conducted before and after the training to evaluate knowledge acquisition. Qualitative data were collected through semi-structured interviews and FGDs with selected participants and training facilitators to gain deeper insights into training challenges and effectiveness. Additionally, institutional performance metrics, such as administrative efficiency, error reduction, and system adoption rates, were analyzed from organizational records to assess the broader impact of training.

**Data Analysis Techniques**

The data collected were analyzed using both quantitative and qualitative methods:

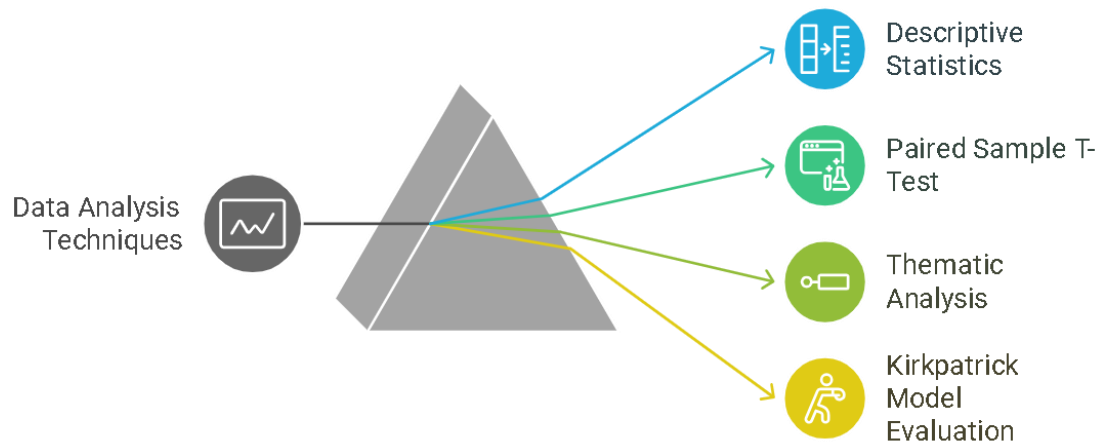


Figure 2. Data Analysis Techniques

The researchers used descriptive statistics such as means, standard deviations, and frequency distributions to summarize survey responses and test scores. A paired sample t-test was applied to compare pre-test and post-test results, determining whether the training significantly improved participants' knowledge and skills. Qualitative data from interviews and FGDs were analyzed using thematic analysis to identify key trends and challenges in training effectiveness. The study also applies the Kirkpatrick Model, categorizing findings into four levels—Reaction (participant satisfaction and engagement), Learning (knowledge gained), Behavior (application of skills in the workplace), and Results (impact on institutional efficiency).

**Ethical Considerations**

This study adheres to ethical research principles, ensuring participant confidentiality and voluntary participation. The researchers fully informed all participants about the research objectives and obtained informed consent before collecting data. The study follows ethical guidelines to protect participant rights and ensure data collection and analysis integrity.

**RESULTS**

The study involved 24 participants from various administrative and academic support roles. Most participants were female (75%), while 25% were male. Regarding age distribution, 54.17% of participants were between 21 and 30, 37.50% between 31 and 40, and 8.33% between 41 and 50. The educational background of the respondents showed that 79.17% held a bachelor's degree (S1), while 20.83% had a master's degree (S2). These characteristics highlight the composition of the training participants and help contextualize the study's findings. Table 1 provides a breakdown of respondent demographics.

Table 1. Demographic Characteristics of Respondents

Category	Frequency (N)	Percentage (%)
<b>Gender</b>		
Male	6	25.00
Female	18	75.00
<b>Age Group</b>		
21-30 years	13	54.17
31-40 years	9	37.50
41-50 years	2	8.33
<b>Education</b>		
Bachelor's (S1)	19	79.17
Master's (S2)	5	20.83

Researchers assessed the effectiveness of the training program using a Likert-scale questionnaire, which yielded an overall effectiveness score of 4.33 out of 5, indicating a high level of satisfaction. Participants rated the training materials and environment as the most effective aspects, scoring 4.50, while time allocation for training received the lowest rating at 4.08. These findings suggest that while participants valued the training content and delivery, they felt the need for more time for practical exercises. Table 2 summarizes the effectiveness ratings.

**Table 2. Training Effectiveness Scores**

Training Aspect	Mean Score (Out of 5)
Training Materials	4.50
Training Environment	4.50
Instructor Performance	4.42
Participant Engagement	4.30
Time Allocation	4.08

Pre-test and post-test assessments were conducted to evaluate knowledge acquisition. The results showed a notable improvement in participants' understanding of the Management Information System (MIS). The average pre-test score was 3.21, which increased to 4.45 in the post-test, demonstrating a clear enhancement in digital competency. The greatest improvement was observed in data entry accuracy (1.33-point increase) and report generation (1.20-point increase), which are critical for administrative efficiency. These results highlight the effectiveness of the training in equipping participants with the necessary skills. Table 3 provides a detailed comparison of pre-test and post-test scores.

**Table 3. Knowledge Improvement Analysis**

Competency Area	Pre-Test Score	Post-Test Score	Score Increase
Data Entry Accuracy	3.00	4.33	+1.33
Report Generation	3.20	4.40	+1.20
System Navigation	3.40	4.50	+1.10
Error Identification	3.25	4.48	+1.23

Researchers assessed behavioural changes following the training through self-reported surveys and institutional performance data. Eighty-nine percent (89%) of participants reported applying their newly acquired skills in daily tasks, leading to measurable improvements in data accuracy, administrative efficiency, and decision-making processes. Institutional records indicated a 35% reduction in data entry errors and a 27% decrease in processing time for student records and financial reporting. These improvements suggest that training enhanced knowledge and resulted in positive workplace applications.

**Table 4. Changes in Workplace Efficiency**

Metric	Before Training	After Training	Improvement (%)
Data Entry Error Rate	12.5%	8.1%	-35%
Record Processing Time	6.8 hours	5.0 hours	-27%
System Utilization Rate	65%	91%	+26%

The qualitative feedback from participants further supports these findings. Ninety-two percent (92%) of respondents found the training relevant to their job responsibilities, while 84% expressed interest in ongoing training to refine their skills further. Several participants suggested longer hands-on sessions, department-specific workshops, and follow-up evaluations to maximize the training program's impact.

Institutional performance metrics provided further evidence of training effectiveness. System utilization rates increased by 26%, demonstrating that staff members were more confident using digital tools post-training. Additionally, the team improved workflow efficiency by significantly reducing errors and shortening processing times. These findings reinforce the importance of structured training programs in facilitating digital transformation in educational institutions.

## DISCUSSION

The findings of this study provide valuable insights into the effectiveness of digital-based technical guidance for educational staff in utilizing a Management Information System (MIS). The results indicate a high level of satisfaction among participants, with an overall effectiveness rating of 4.33 out of 5. It aligns with previous studies highlighting the importance of well-structured training programs in enhancing digital competency among educational professionals ([Chohan & Hu, 2022](#); [Kommisetty & Dileep, 2022](#); [Roll & Ifenthaler, 2021](#)). The positive evaluation of training materials and instructor performance suggests that content relevance and delivery methods are crucial in successful training outcomes. However, the lower rating for time allocation suggests that participants required additional time for practical applications, reinforcing findings from similar studies that emphasize the need for extended hands-on learning sessions.

The results demonstrated a significant increase in knowledge acquisition, as shown by the improvement from pre-test to post-test scores. These results support the Kirkpatrick Model of Training Evaluation, which posits that effective training should lead to measurable learning gains ([Alsalamah & Callinan, 2021](#); [Cahapay, 2021](#); [Kirkpatrick & Kirkpatrick, 2016](#)). The biggest improvements were recorded in data entry accuracy and report generation, suggesting that targeted training modules focusing on technical skills yield substantial benefits. This finding is consistent with research that found that hands-on training methods significantly enhance the retention and application of digital competencies in workplace settings ([May et al., 2023](#); [Mukherjee et al., 2022](#)).

Behavioural changes were also evident, with most participants applying newly acquired skills in their daily tasks. The observed reduction in data entry errors and decrease in record processing time demonstrate the practical impact of training on institutional efficiency. It aligns with studies emphasizing that digital competency development improves accuracy, productivity, and streamlined administrative operations ([Bygstad et al., 2022](#); [Yu & Moon, 2021](#); [J. Zhang & Chen, 2024](#)). Furthermore, the increase in system utilization rates suggests that training programs contribute to higher adoption of digital tools, a finding consistent with previous research on the role of capacity-building initiatives in technology acceptance ([Juckett et al., 2022](#); [Torabi et al., 2023](#); [Viglione et al., 2023](#)).

Despite these positive outcomes, we must acknowledge certain limitations. The researchers conducted the study with a relatively small sample size, which may limit the generalizability of the findings to a broader population. Future research should consider larger sample sizes across multiple institutions to enhance external validity. Additionally, the study relied on self-reported data for behavioural changes, which may introduce response bias. Complementary observational studies could provide more objective measures of skill application and system usage post-training. The cross-sectional nature of this study also limits the ability to assess the long-term impacts of the training program, suggesting the need for longitudinal studies to evaluate sustained improvements in digital competency.

The findings have several implications for educational management. Institutions should prioritize ongoing technical training programs to ensure continuous skill development among educational staff. Additionally, trainers should tailor curricula to include more interactive and practice-based learning components, addressing the identified need for extended hands-on experience. Implementing periodic refresher courses and follow-up evaluations could further reinforce learning outcomes and sustain improvements in workplace efficiency. These measures could ensure that educational institutions remain adaptable to evolving technological advancements and continue to optimize their digital management systems effectively.

Institutional support is crucial in sustaining the benefits of digital-based technical guidance. Management should facilitate access to updated training resources, provide dedicated time for staff to practice newly learned skills, and encourage a culture of digital literacy within the institution. Research indicates that institutions supporting ongoing digital skill development see higher staff engagement and

system adoption rates. Moreover, fostering a collaborative learning environment where staff can share best practices and troubleshooting strategies may further enhance the overall impact of training programs.

Another key consideration is adapting training programs to different learning styles and technological proficiency levels. Some participants may require more in-depth training sessions, while others may benefit from more self-paced learning options. Designing flexible learning pathways accommodating diverse educational backgrounds and job responsibilities could improve training effectiveness. Studies on adult learning emphasize that customized training approaches lead to better knowledge retention and application in professional settings.

Future research should explore the role of mentorship and peer support in reinforcing digital skills after training completion. Encouraging staff members who have successfully integrated MIS into their daily tasks to mentor colleagues could foster a culture of knowledge-sharing and sustained skill development. Additionally, investigating the effectiveness of blended learning models combining online modules with in-person workshops could provide further insights into optimizing training delivery.

Another potential area for exploration is the financial and administrative impact of enhanced digital competency among educational staff. Research could examine whether data management and efficiency improvements translate into cost savings or resource optimization for institutions. Understanding the broader organizational benefits of digital training could strengthen the case for continued investment in professional development initiatives.

## CONCLUSION

This study examined the effectiveness of digital-based technical guidance for educational staff in utilizing a Management Information System (MIS). The findings indicate that well-structured training programs significantly improve participants' digital competencies, enhancing administrative processes' efficiency. The training program received high satisfaction ratings, particularly for content relevance and instructional quality. The improvements in knowledge acquisition and behavioural changes further highlight the importance of digital training in modern educational institutions.

The increase in post-test scores and reduced data entry errors demonstrate that structured digital training can improve workplace efficiency. Participants reported greater confidence in using the MIS, resulting in a higher adoption rate of digital tools. These findings emphasize the necessity of continued professional development programs to sustain digital competency and optimize institutional performance.

Despite these positive outcomes, the study acknowledges limitations, including a small sample size and reliance on self-reported data. Future research should explore the long-term impact of digital training programs and consider larger, more diverse participant groups to enhance generalizability. Additionally, longitudinal studies could provide deeper insights into how digital competencies evolve and how institutions can further support continuous learning.

The implications of this study suggest that educational institutions should invest in ongoing digital training initiatives, incorporating interactive and hands-on learning approaches. Implementing periodic refresher courses and peer mentoring systems could further reinforce digital skills and ensure long-term competency retention. By fostering a culture of digital literacy, institutions can enhance operational efficiency and better support their administrative and academic functions.

This study underscores the vital role of digital-based technical guidance in equipping educational staff with the necessary skills to adapt to evolving technological demands. A well-implemented training program can lead to substantial improvements in both individual competencies and institutional performance. Ensuring continuous learning opportunities and institutional support will be key to sustaining the benefits of digital transformation in the education sector.

## *Funding and Conflicts of Interest*

The authors declare no funding and conflicts of interest for this research.

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